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Service Manual

15” LCD MONITOR
DELL E153FPc

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Revision List

Revision	Release Date	Revise History	TPV model
A00	Mar.-11-2005	Initial Release	T560KCLHM8DLN
			T560KCLHM8DRN
A01	Nov.-22-2005	Add **"Important Safety Notice"**	
A02	Mar.-31-2006	Add" **Definition Of Pixel Defects**"	
A03	April-25-2006	Add" **Max Brightness measurement**" on Page42	
A04	Mar.-30-2007	Add Mechanical Instruction in item 6	

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Important Safety Notice

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.
CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING
REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINGS

Proper service and repair is important to the safe, reliable operation of all Dell Company** Equipment. The service procedures recommended by Dell and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.
It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Dell could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Dell has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Dell must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

* * Hereafter throughout this manual, Dell Company will be referred to as Dell.
WARNING
Use of substitute replacement parts, which do not have the same, specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Dell. Dell assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

FOR PRODUCTS CONTAINING LASER:

DANGER - Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
CAUTION - The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

Take care during handling the LCD module with backlight unit

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the Panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person’s body is grounded through wristband.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- Avoid contact with water as it may a short circuit within the module.

If the surface of panel becomes dirty, please wipe it off with a soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

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1. Monitor Specifications

LCD Panel	Driving system	TFT Color LCD
	Size	38cm(15.0")
	Pixel pitch	0.297mm(H) x 0.297mm(V)
	Viewable angle	120° (H) 100° (V)
	Brightness	200cd/m^2 （Min）
	Response time (typ.)	16 ms
Input	Video	Analog Only
	Sync. Type	H/V TTL Separate and Composite Sync.
	H-Frequency	30kHz – 63kHz
	V-Frequency	56 Hz -75Hz
Display Colors		Over 16.2 million Colors
Dot Clock		80MHz
Max. Resolution		1024 x 768
Plug & Play		VESA DDC2B™
Power Consumption	ON Mode	<25W
	Power Saving	<2W
Maximum Screen Size		Horizontal: 304.1mm Vertical: 228.1mm
Power Source		90~264VAC, 47~63Hz
Environmental Considerations		Operating Temp: 5°C to 40°C Storage Temp: 5°C to 60°C Operating Humidity: 10% to 85%
Weight (N. W.)	Packaged	5.3Kgs Unit
	Unpackaged	3.5Kgs Unit

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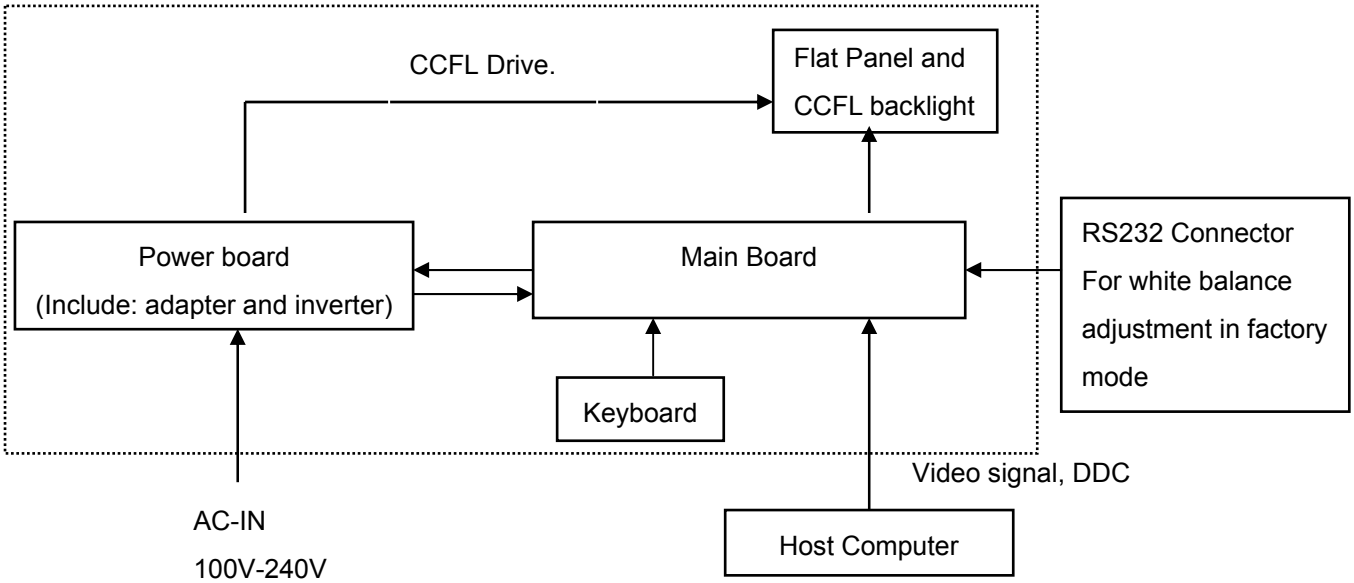
2. LCD Monitor Description

The LCD MONITOR will contain a main board, an inverter/power board, keypad board, which house the flat panel control logic, brightness control logic and DDC.

The power board will provide AC to DC Inverter voltage to drive the backlight of panel and the main board chips each voltage.

Monitor Block Diagram



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3. Operation instructions

3.1 General Instructions

Press the power button to turn the monitor on or off. The other control buttons are located at front panel of the monitor. By changing these settings, the picture can be adjusted to your personal preferences.

- The power cord should be connected.
- Connect the video cable from the monitor to the video card.
- Press the power button to turn on the monitor, the power indicator will light up.

3.2 Control Buttons

Power Button: When pressed, the monitor enters the off mode, and the LED turns blank. Press again to restore normal status.

Brightness Button: The Brightness Button is used to select the Brightness/Contrast adjust functions. Press to switch functions or adjust settings.

Auto Adjust Key: The Auto Adjust Key is used to automatically set the H Position, V Position, Clock and Phase.

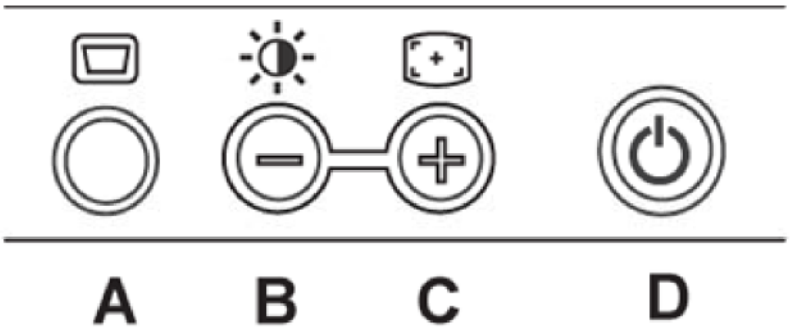
Power Indicator:

Green — Power On mode.

Orange — Power Saving mode.

Blank —Power Off Mode.

Control Button



A. Buttons for the OSD menu (On-Screen-display)

B. Brightness Button

C. Auto Adjust Button

D. Power On/Off Button and indicator

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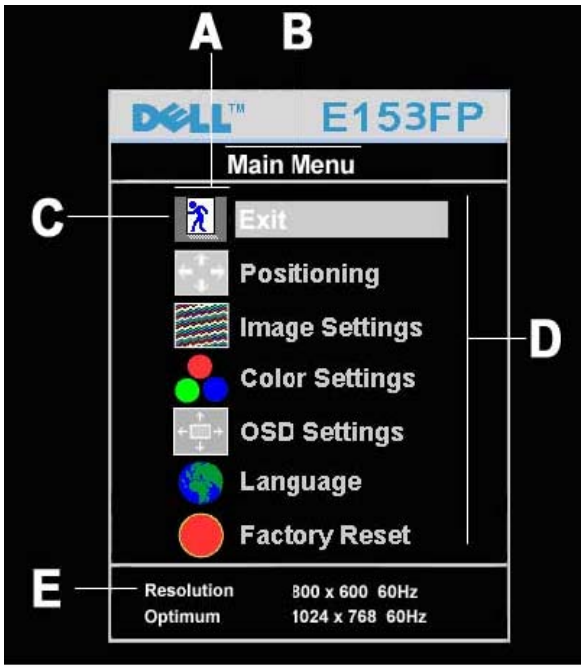
3.3 Adjusting the Picture

To set the OSD menu, perform the following steps:

Briefly press the SELCT / MENU button to activate the OSD menu.

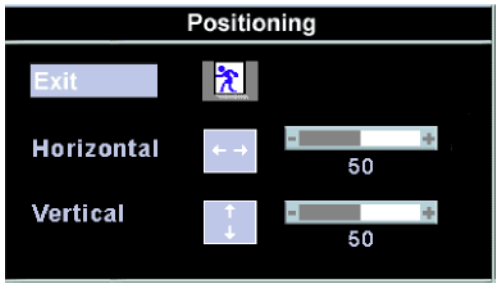
The main menu appears on the screen with icons for the setting functions.



The first symbol *(Exit)* is highlighted.

Necessary, press the - or + button to mark another icon (e.g. *Positioning).* Press the SELECT/MENU button to select the highlighted icon.

The corresponding setting window (here: *Positioning)* is displayed.



The first symbol *(Exit)* is highlighted.

If necessary, press the – or + button to mark the desired icon.

Press the SELECT/MENU button to select the highlighted function.

Press the – or + button to adjust the value for the selected function.

Press the SELECT/MENU button to exit the function.

Press the SELECT/MENU button to exit the sub-menu when “Exit” function is highlighted.

All changes are stored automatically.

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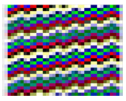
Adjusting the brightness and contrast

	Calling the *Brightness / Contrast* setting window using Brightness button.
Brightness	Setting the brightness of the display With this function you change the brightness of the background lighting.
Contrast	Setting the contrast of the display With this function you modify the contrast of bright color tones.

Adjusting size and position

	Calling the Positioning setting window
H-Position	Adjusting the horizontal position With this function you move the picture to the left or to the right.
V-Position	Adjusting the vertical position With this function you move the picture up or down.

Setting Image

	Calling the Image setting window
Auto Adjust	Auto adjust will produce best image automatically, The information of " Auto Adjust In Progress" will show;
Pixel clock	Adjusting the pixel clock
Phase	Adjusting the phase

Setting color temperature and colors

	Calling the *Color* setting window
	Selecting the color temperature The color temperature is measured in K (= Kelvin). You can select from Normal Preset, Blue Preset, Red Preset to User Preset; *Normal preset* = Original color of the LCD display, it's 6500K; *Blue preset* =5700Kcolour of the LCD display, it's 9300K; *Red preset* =9300K color of the LCD display, it's 5700K; *User preset* = Setting user-defined colors In the user preset setting you can change the color ratios of the basic colors (red, green, blue) as required.

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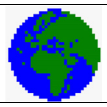
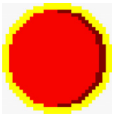
Setting display of the OSD menu

	Calling the *OSD Set up* setting window
Horizontal Position	Setting the horizontal position of the OSD menu With this function you move the OSD menu to the left or to the right.
Vertical Position	Setting the vertical position of the OSD menu With this function you move the OSD menu up or down.
OSD Hold Time	Setting the display duration of the OSD menu With this function you select a value from 0 to 60 seconds. If the set time expires without a setting being made, the OSD menu is automatically faded out.
OSD Lock	Setting the display of the OSD menu lock or unlock. With this function you select Yes to lock OSD, NO to unlock it.

Setting Language

	Calling the *Language* setting window
	With this function you choose between English (default setting), French, German, Spanish and Japanese as the language for the OSD menu.

Factory Reset

	Activating the factory settings
	With this function all settings except Language of OSD are reset to the factory settings without prompting for confirmation.

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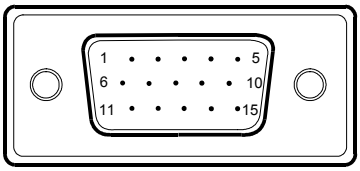
4. Input/Output Specification

4.1 Input Signal Connector

Pin No.	Description	Pin No.	Description
1.	Red	9.	+5V
2.	Green	10.	Detect Cable
3.	Blue	11.	Ground
4.	Ground	12.	DDC-Serial Data
5.	Ground	13.	H-Sync
6.	R-Ground	14.	V-Sync
7.	G-Ground	15.	DDC-Serial Clock
8.	B-Ground		
VGA Connector layout			
			

4.2 Factory Preset Display Modes

VESA MODES							
			Horizontal		Vertical		
Mode	Resolution	Total	Nominal Frequency +/- 0.5kHz	Sync Polarity	Nominal Freq. +/- 1 Hz	Sync Polarity	Nominal Pixel Clock (MHz)
VGA	640x480@60Hz	800 x 525	31.469	N	59.940	N	25.175
	640x480@75Hz	840 x 500	37.500	N	75.00	N	31.500
	800x600@60Hz	1056 x 628	37.879	P	60.317	P	40.000
	800x600@75Hz	1056x625	46.875	P	75.000	P	49.500
XGA	1024x768@60Hz	1344x806	48.363	N	60.004	N	65.000
	1024x768@75Hz	1312x800	60.023	P	75.029	P	78.750

IBM MODES							
Mode	Resolution	Total	Nominal Frequency +/- 0.5kHz	Sync Polarity	Nominal Freq. +/- 1 Hz	Sync Polarity	Nominal Pixel Clock (MHz)
DOS	720x400@70Hz	900 x 449	31.469	N	70.087	P	28.322

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4.3 Power Supply Requirements

A/C Line voltage range	100 V ~ 240 V± 10 %
A/C Line frequency range	50 ± 3Hz, 60 ± 3Hz
Input Voltage transients	280 volts AC for 10 sec @40℃
Current	0.6A max. at 100V, 0.35A max. at 240 V
Peak surge current	< 60A peak at 240 VAC and cold starting < 30A peak at 120VAC and cold starting
Leakage current	: < 3.5mA
Power line surge	No advance effects (no loss of information or defect) with a maximum of 1 half-wave missing per second

4.4 Panel Specification (CPT15”011 ZB)

4.4.1 Panel Feature

CLAA150XG09(with LVDS interface) is 15.0” color TFT-LCD (Thin Film Transistor Liquid Crystal Display) module composed of LCD panel, driver ICs, control circuit and backlight.

By applying 8 bit digital data, 1024×768, 16.2M(6 Bit+FRC)-color images are displayed on the 15.0” diagonal screen. Input power voltage is 3.3V for LCD driving.

Inverter for backlight is not included in this module. General specification are summarized in the following table:

4.4.2 Display Characteristics

ITEM	SPECIFICATION
Display Area(mm)	304.1(H)x228.1(V) (15.0-inch diagonal)
Number of Pixels	1024(H)x768(V)
Pixel Pitch(mm)	0.297(H)x0.297(V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	normally white TN
Number of Colors	16.2M(6 Bit+FRC)
Brightness(cd/m^2)	250cd/m^2(Typ.)(Center point ,IL=8mA)
Viewing Angle	-60~60(H),-55~45(V) (Typ.)
Surface Treatment	Anti-glare,3H
Electrical Interface	LVDS , 1Ch
Total Module Power(W)	7.0(Typ.)
Optimum Viewing Angle	6 o’clock
Module Size(mm)	326.0(W)×251.0(H)×12.0(D)
Module Weight(g)	1200
Backlight Unit	CCFL, 2 tables, edge-light(top*1/bottom*1)

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4.4.3 Optical Characteristics

The optical characteristics are measured under stable conditions as follows:

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Contrast Ratio		CR	θ =ϕ=0°	300	400	--	--
Luminance	Normal	LW	θ =ϕ=0°	200	250	--	cd/m^2
	Uniformity	ΔLW	θ =ϕ=0°	75	80	--	%
Response Time (Black/White)		Tr	θ =ϕ=0°	--	9	15	ms
		Tf		--	16	25	ms
Viewing Angle	Horizontal	ϕ	CR≧10	-50~50	-60~60	--	°
	Vertical	θ		-45~35	-55~45	--	°
	Horizontal	ϕ	CR≧5	-65~65	-75~75	--	°
	Vertical	θ		-65~45	-75~50	--	°
Image sticking		tis	2hours	--	--	2	s
Cross talk		CMR	θ = φ =0	--	--	1	%
Gamut(%)		Gamut		57	60	--	%
Flicker		f				-20	db
gamma				2.0	2.2	2.4	
Color Coordinates	Red	Rx Ry	θ =ϕ=0°	0.613 0.314	0.643 0.344	0.673 0.374	--
	Green	Gx Gy		0.274 0.536	0.304 0.566	0.334 0.596	
	Blue	Bx By		0.111 0.055	0.141 0.085	0.171 0.115	
	White	Wx Wy		0.282 0.288	0.312 0.318	0.342 0.348	

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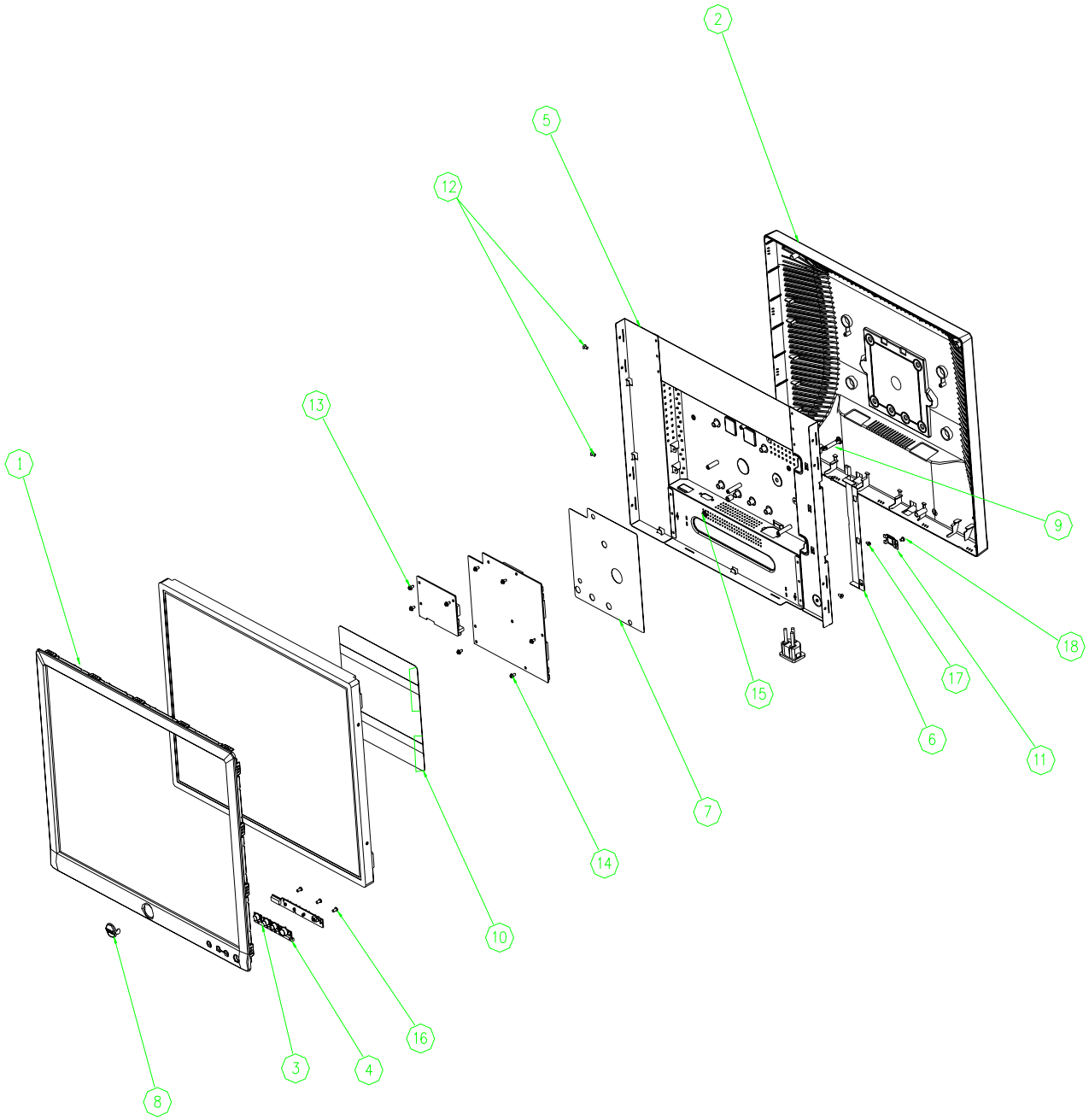
5. Block Diagram

5.1 Monitor Exploded View



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Item	Description	Part Number	Quantity
1	BEZEL	34L1228AY2 T	1
2	REAR COVER	34L1229 Y2 T	1
3	KEYPAD BUTTON	33L4670 GV T	1
4	POWER BUTTON	33L4669 GV C	1
5	MAIN FRAME	15L5941 1 B	1
6	SHIELD INVERTER	85L6097 1	1
7	PROTECT FILM	52L6020 2DE5	1
8	DELL BADGE	23L3178700 1A	1
9	SPACER SUPPORT SCC-24	11L6036 1	1
10	SMALL TAPE	52L 1186	1
11	DIP-EMI	85L6096 1	1
12	SCREW	M1G2940 10225	1
13	SCREW	M1G1740 6128	4
14	SCREW-M3*6	M1L1430-6-128	3
15	SCREW-M4*6	M1L1430-6-128	4
16	SCREW-T3*8	Q1L 330 8120	3
17	SCREW-M3*4	D1L 330 4128	4
18	SCREW-M3*4	D1L 330 4128	2

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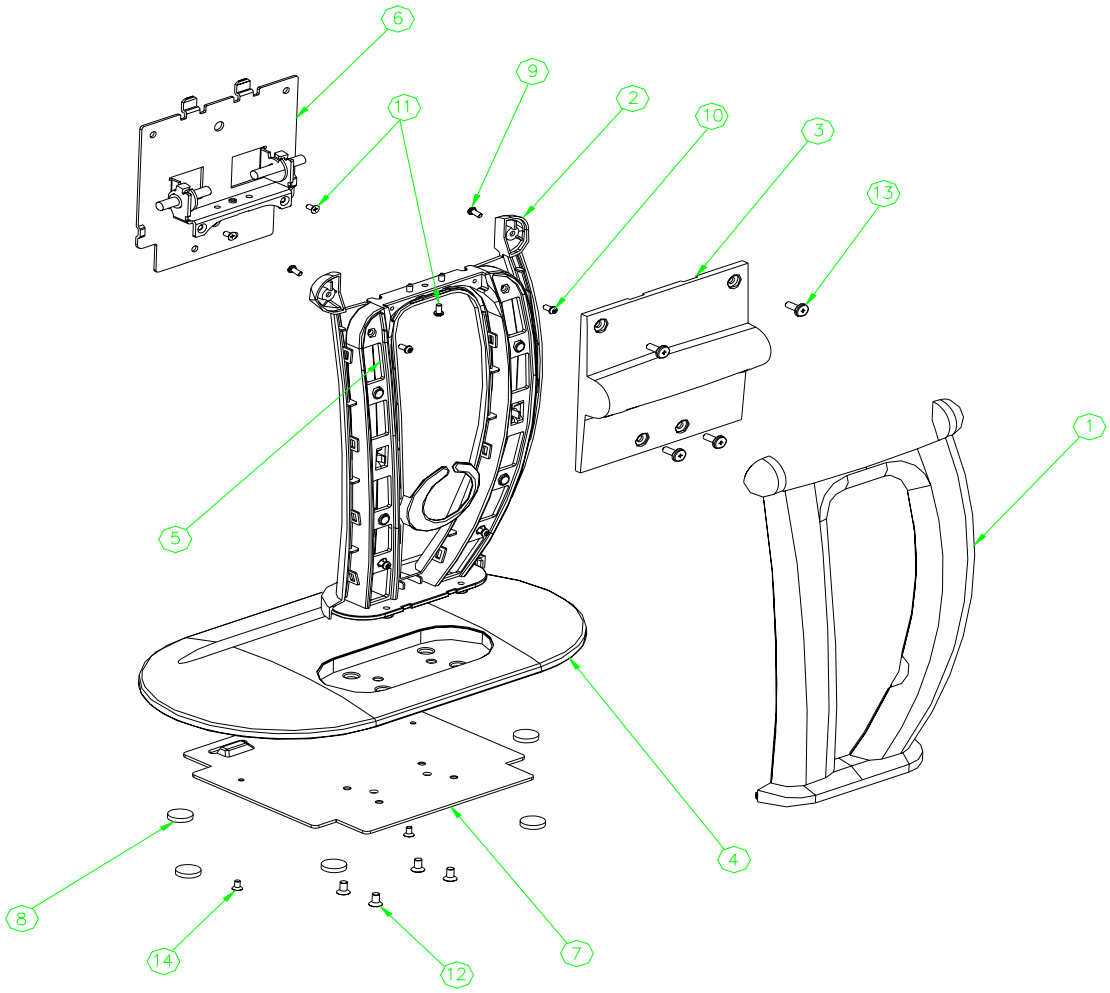

Item	Description	Part Number	Quantity
1	RISER REAR	34L1232 Y2 T	1
2	RISER FRONT	34L1231 Y2 T	1
3	VEVA COVER	34L1230 Y2 T	1
4	BASE	34L1233 Y2 2T	1
5	BRACKET RISER	20L 008 1	1
6	HINGE ASSY	37L 483 1	1
7	BRACKET BASE	15L5942 1 B	1
8	METAL WASHERS	4L0612052 00	4
9	SCREW-T3*8	Q1L330-8-47	2
10	SCREW-T3*6	Q1L330-6-47	6
11	SCREW	M1L130-6-125	1
12	SCREW	M1L140-8-125	2
13	SCREW	M1L 140 8 47	4
14	SCREW-T3*6	Q1L130-6-47	1

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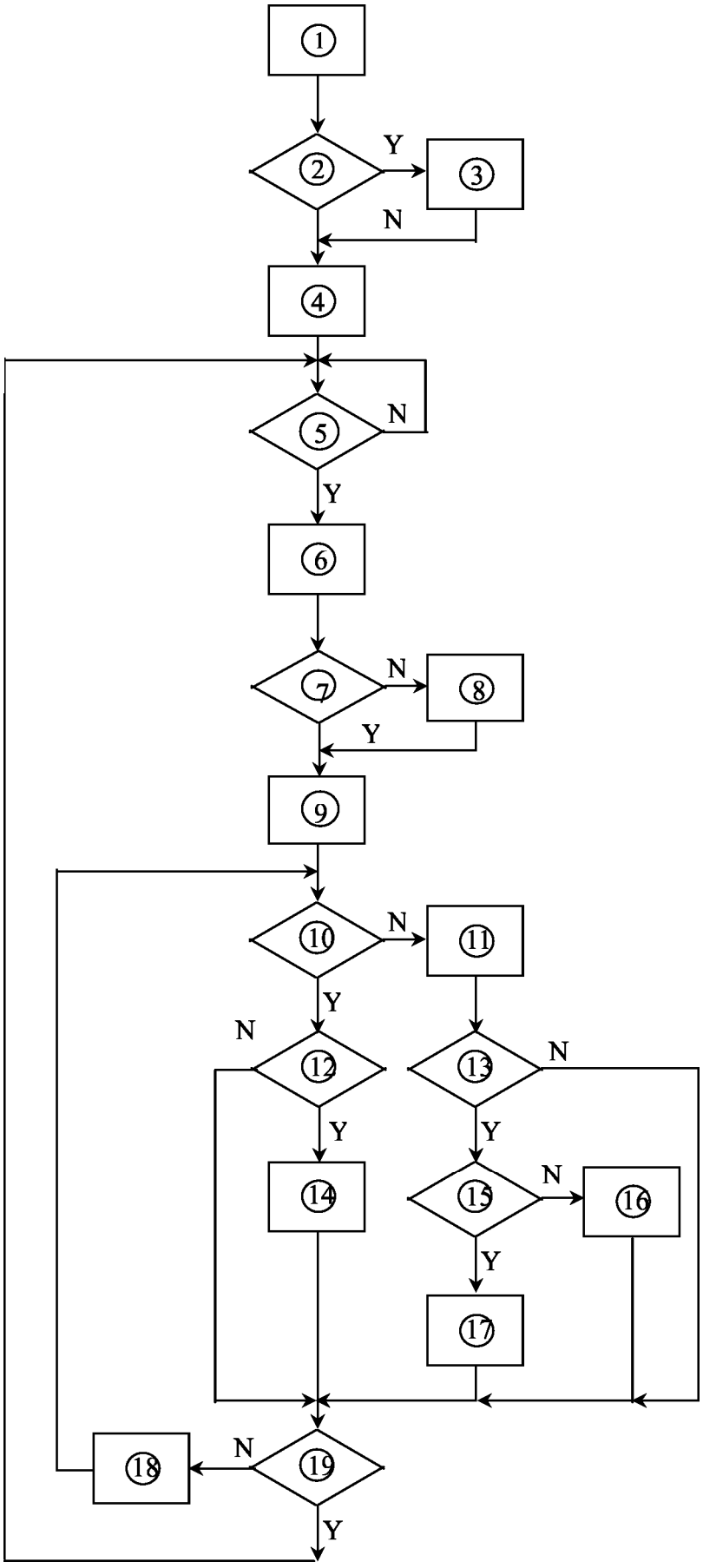
5.2 Software Flow Chart



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1) MCU Initializes.
2) Is the EEprom blank?
3) Program the EEprom by default values.
4) Get the PWM value of brightness from EEprom.
5) Is the power key pressed?
6) Clear all global flags.
7) Are the AUTO and SELECT keys pressed?
8) Enter factory mode.
9) Save the power key status into EEprom. Turn on the LED and set it to green color. Scalar initializes.
10) In standby mode?
11) Update the lifetime of back light.
12) Check the analog port, are there any signals coming?
13) Does the scalar send out an interrupt request?
14) Wake up the scalar.
15) Are there any signals coming from analog port?
16) Display "No connection Check Signal Cable" message. And go into standby mode after the message disappears.
17) Program the scalar to be able to show the coming mode.
18) Process the OSD display.
19) Read the keyboard. Is the power key pressed?

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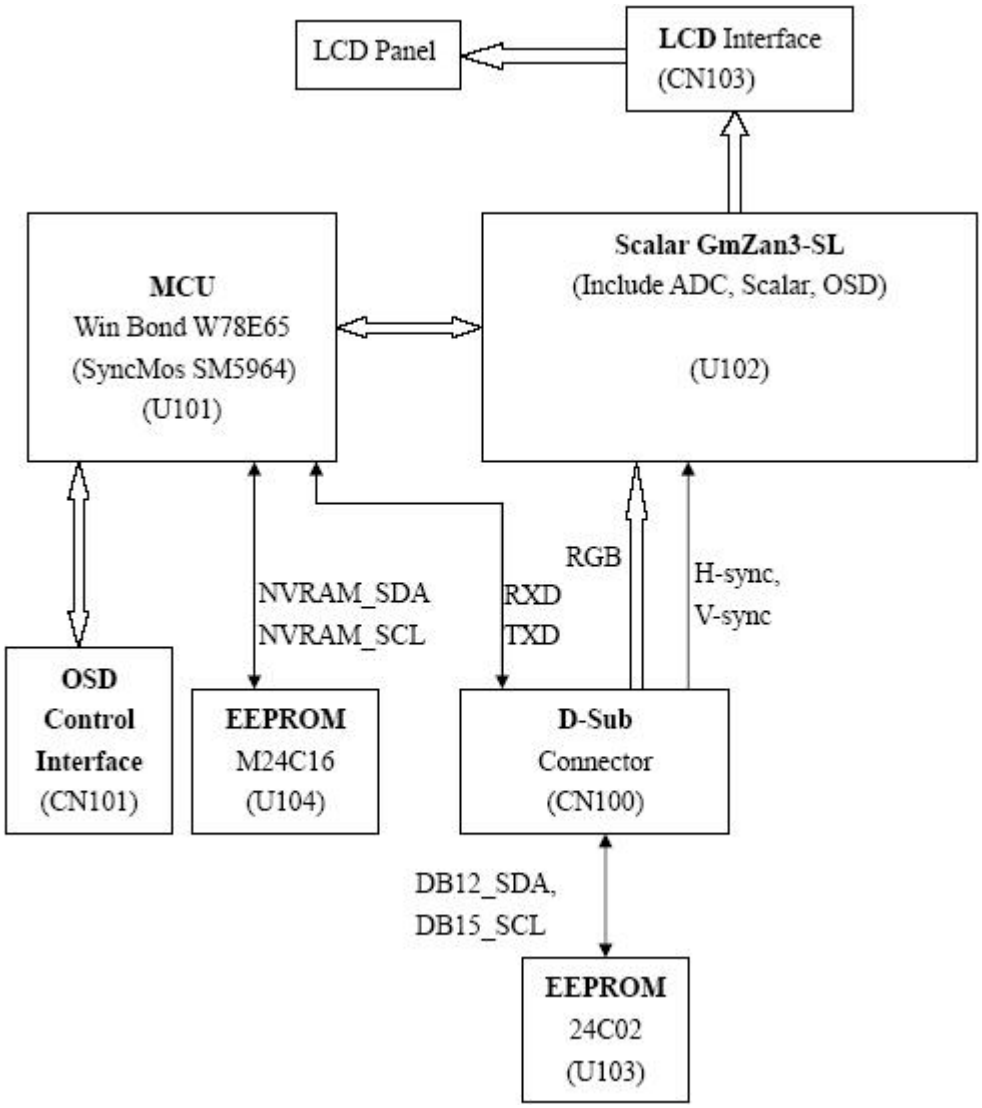
5.3 Electrical Block Diagram

5.3.1 Main Board



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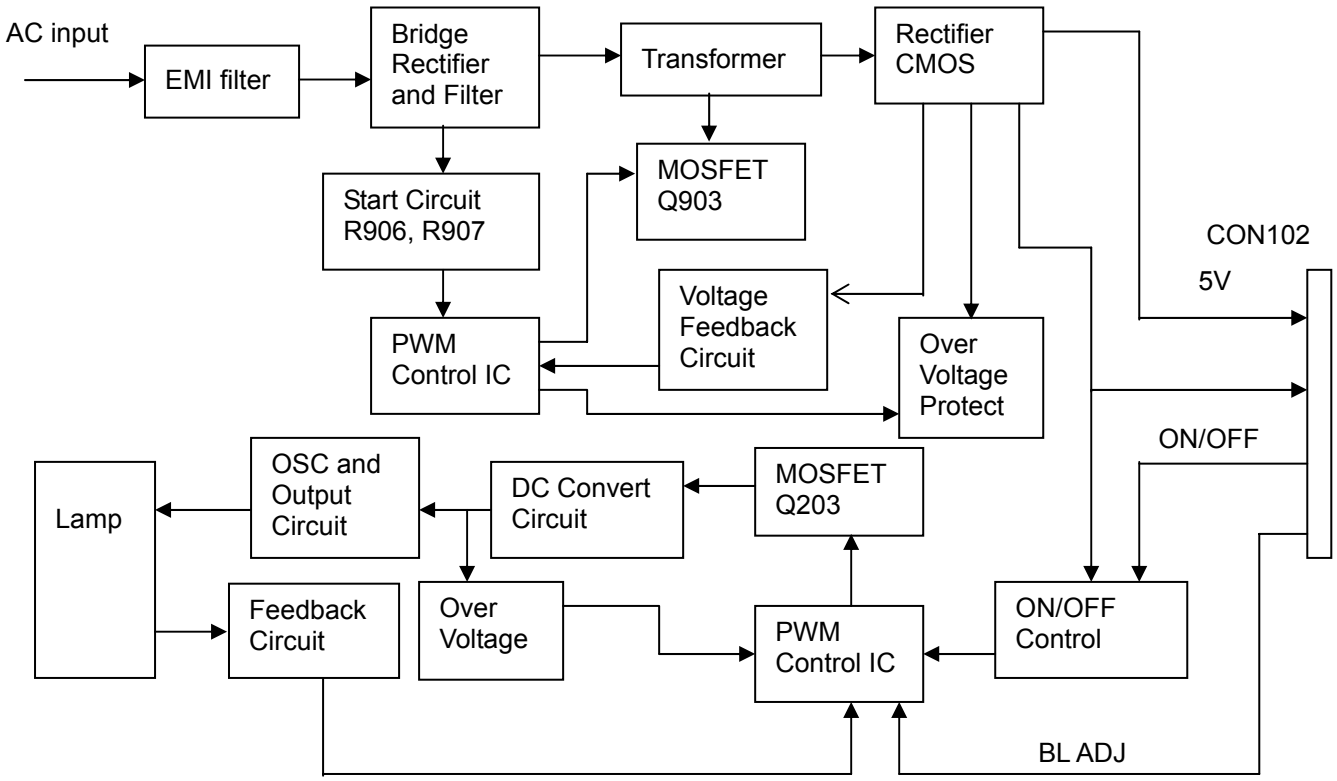
5.3.2 Inverter/Power Board



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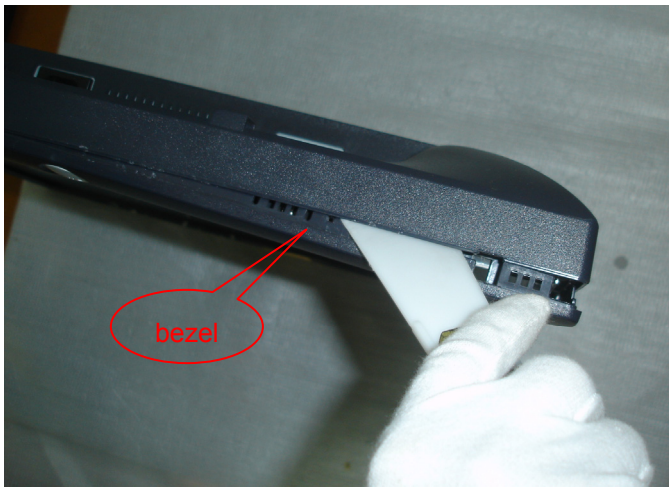
6. Mechanical Instruction

Tools: 2 Power screwdrivers (φ=5mm,L=60mm); 1 small cross screwdriver; turnbuckle driver;

Setting: Power screwdriver torque A=11 kgF. Cm; torque B=6 kgF. Cm

Fig	Remark
	Remove stand： Remove the 4 screws and remove the stand ass'y by torque A
	**Remove the rear cover** Pry the monitor up then find out the hooks' position, use the tool (like the picture or other card) to insert into the gap of bezel and rear cover.
	Turn over the monitor as the Fig and take off the rear cover

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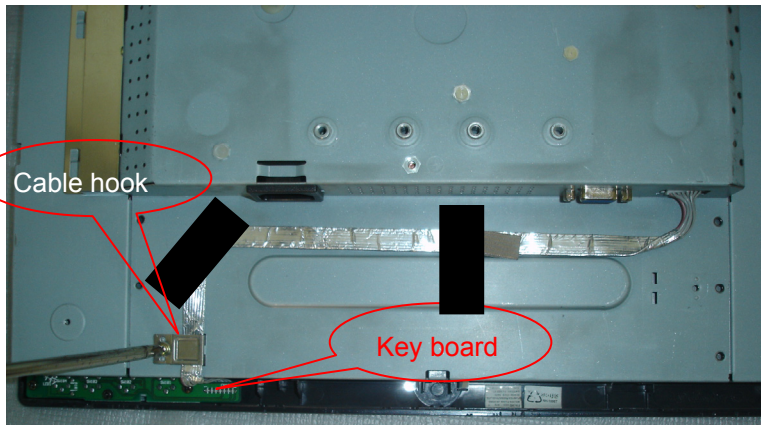
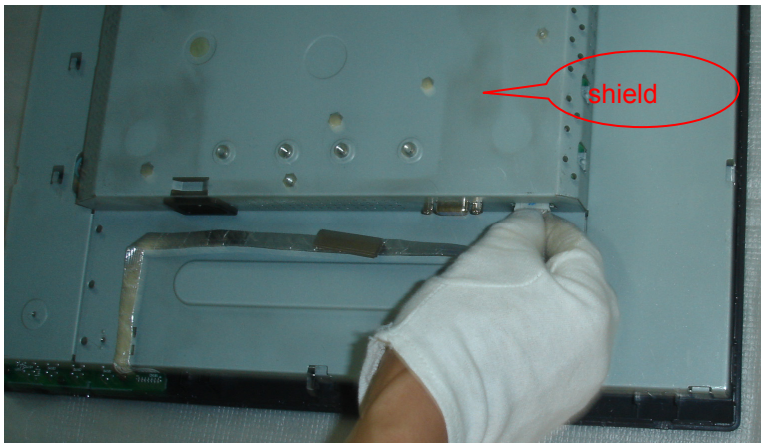
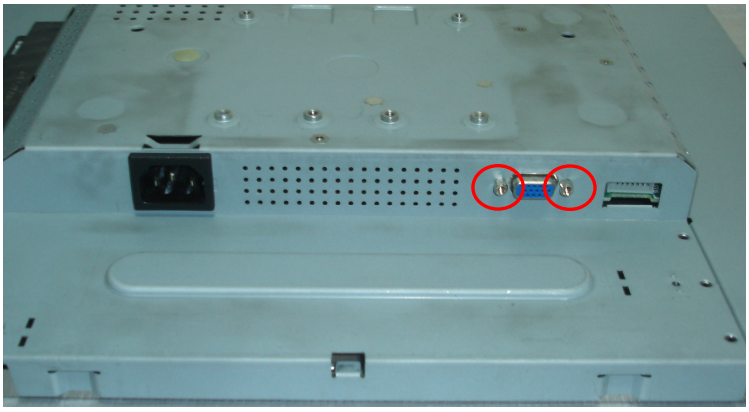




Remove bezel:

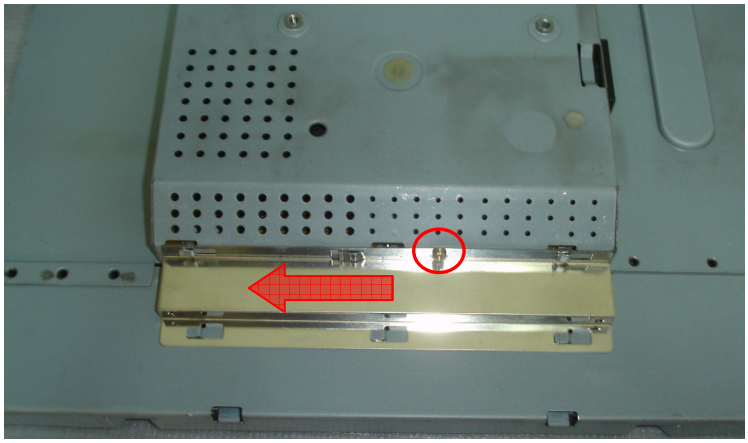
Disconnect the Key board connector and remove the bezel

Note: When installing monitor fixes the cable use Black Adhesive Tape and screw the cable hook.



Remove the small shield:

Remove the screws by Torque B



Remove the screw and push the small shield as the arrowhead direction by Torque B or by manual

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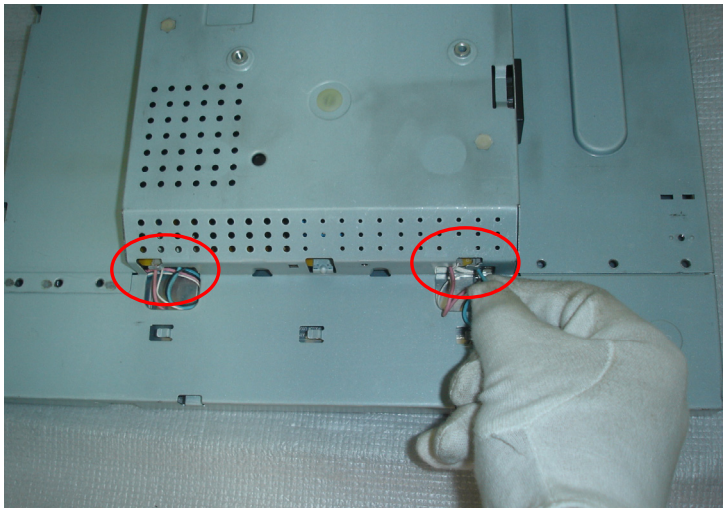
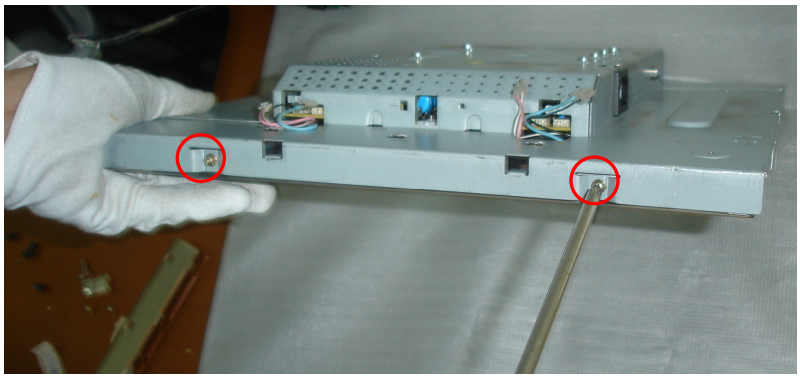
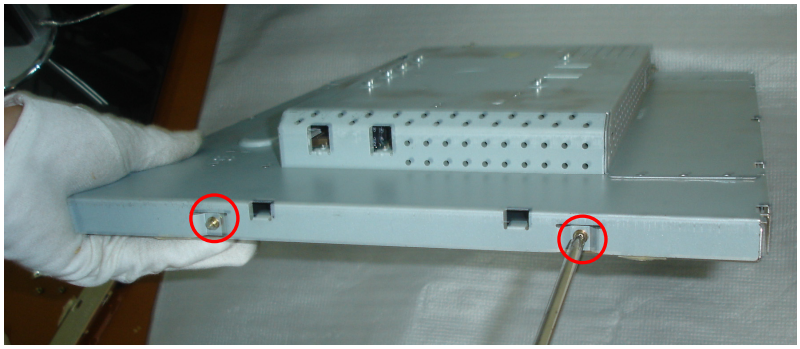


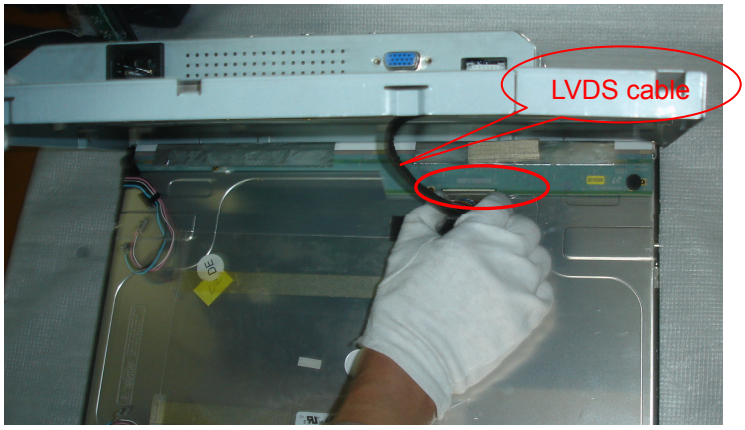
Remove the main frame:

Disconnect the back light connectors





Remove the four screws and remove the main frame by manual or torque = 3kgF.Cm



Remove the main frame and at the same time disconnect the LVDS connector

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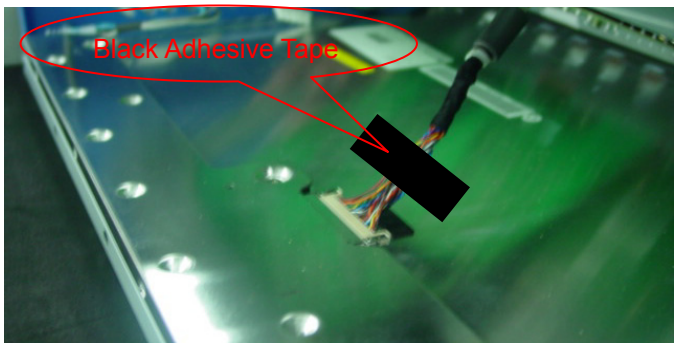
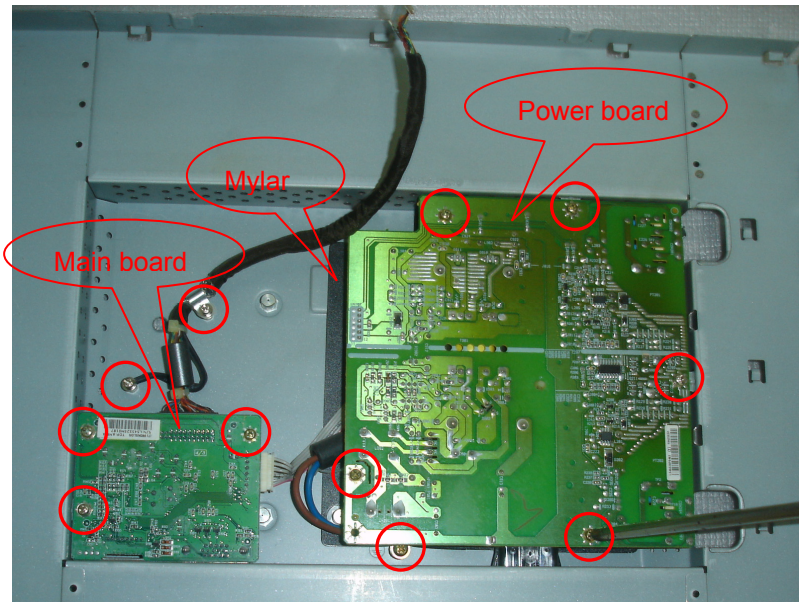
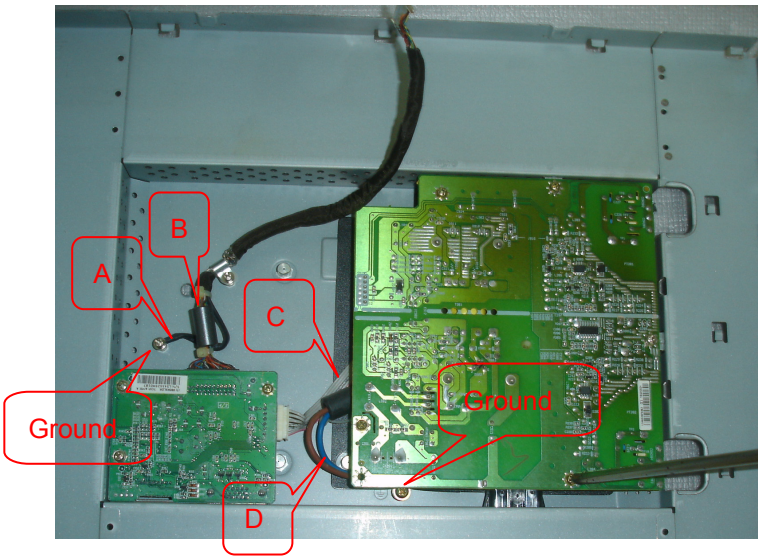
	When installing monitor. Fix the LVDS by Black Adhesive Tape. 10mm should be kept between the tape and the connect end.
	**Remove the Power board and main board：** Remove the eight screws by Torque B And take off the Power board and main board.
	Installing the LVDS cable: Connect the LVDS cable with MB, and then fix the cable by screwing the cable hook, and the ground end to the mainframe. Make sure the ground line is below signal lines. Line C is power supply for the MB. Connect the PB and MB directly; the cable must not touch the pillar of screw.

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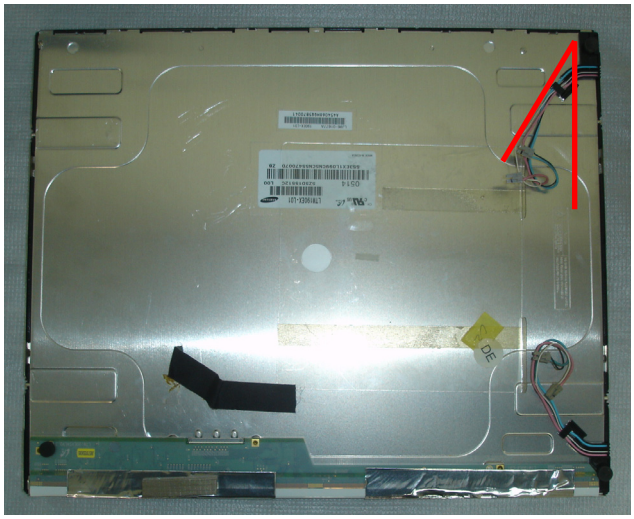	**The end** Lay the FFCL as the figure show

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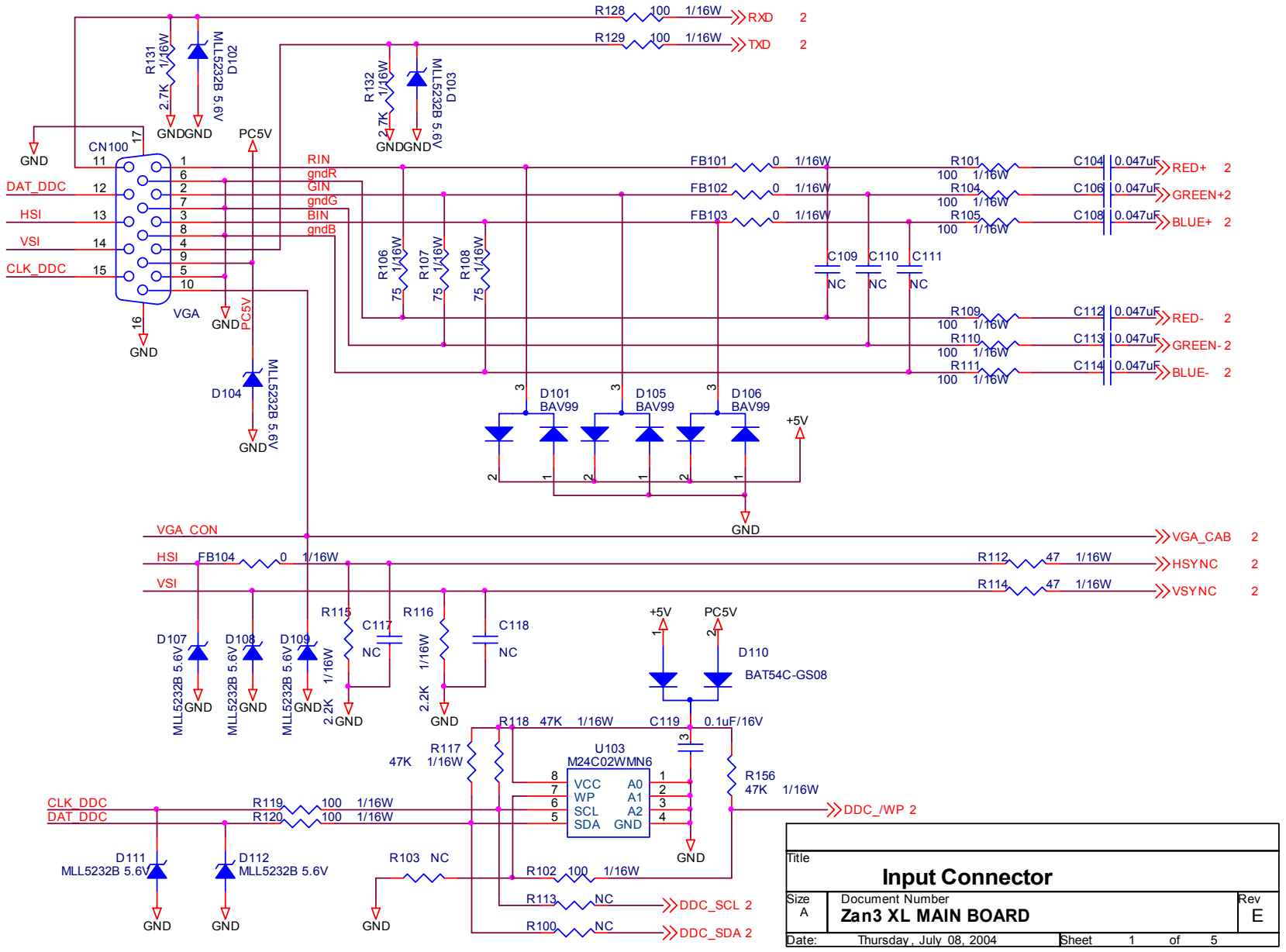
7. Schematic

7.1 Main Board



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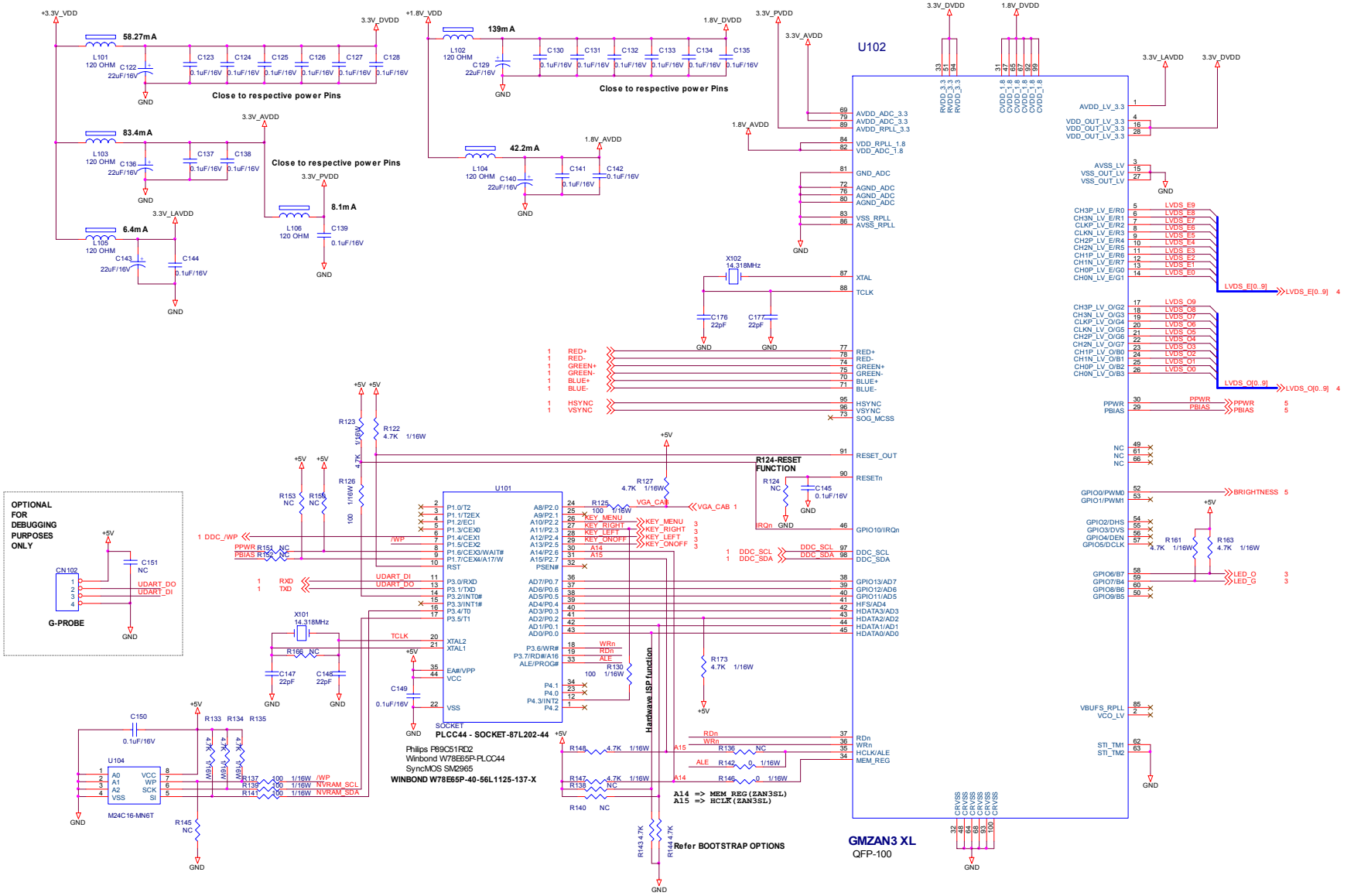

Boot-Strap Configuration:

	HDATA1	HDATA0	Components	Description
DEFAULT	LOW	LOW	IN- R143, R144 OPEN- R138, R140	8 bit I/F
	HIGH	HIGH	IN - R138, R140 OPEN- R143, R144	6-wire Genesis I/F

Title	ZAN3 XL & MCU		
Size C	Document Number Zan3 XL MAIN BOARD		Rev E
Date: Thursday, July 08, 2004	Sheet 2 of 5		

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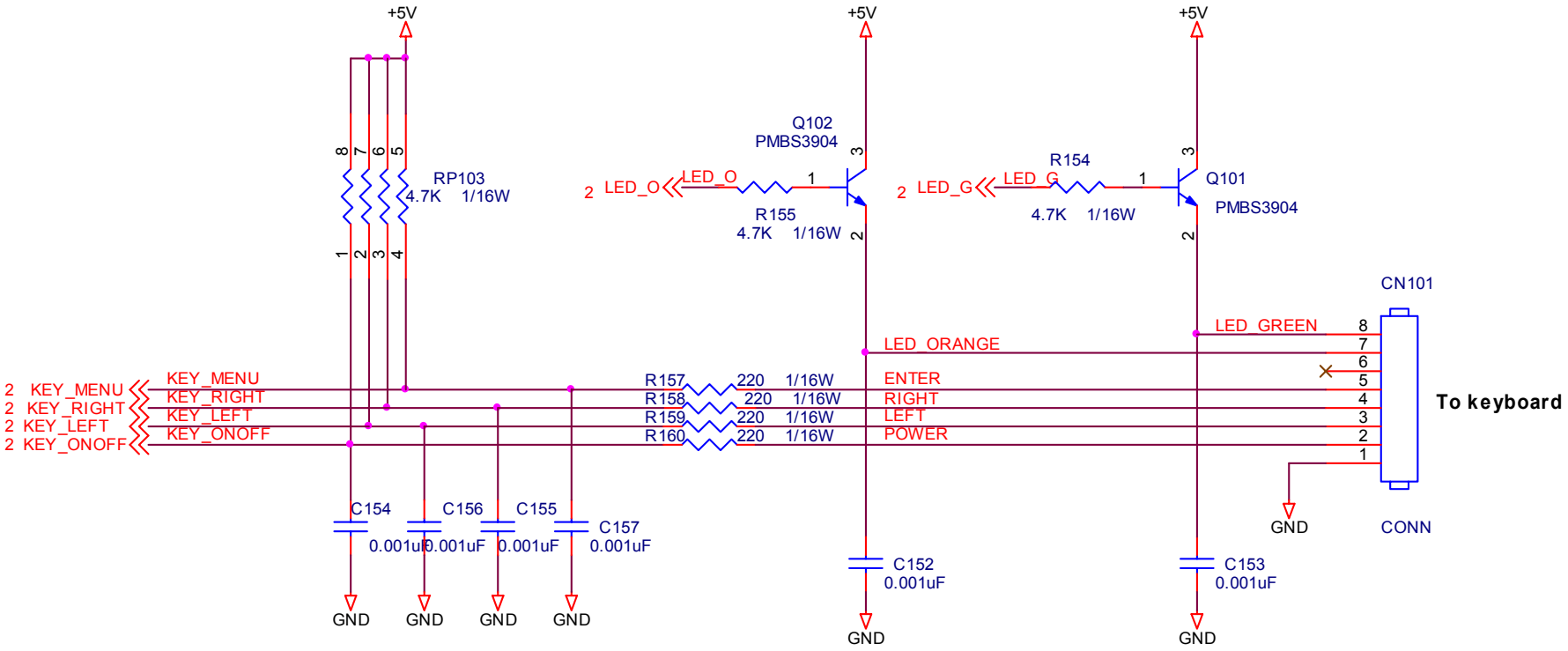

Title: KEYS CONNECTION		
Size: A	Document Number: Zan3 XL MAIN BOARD	Rev: E
Date: Thursday, July 08, 2004	Sheet 3 of 5	

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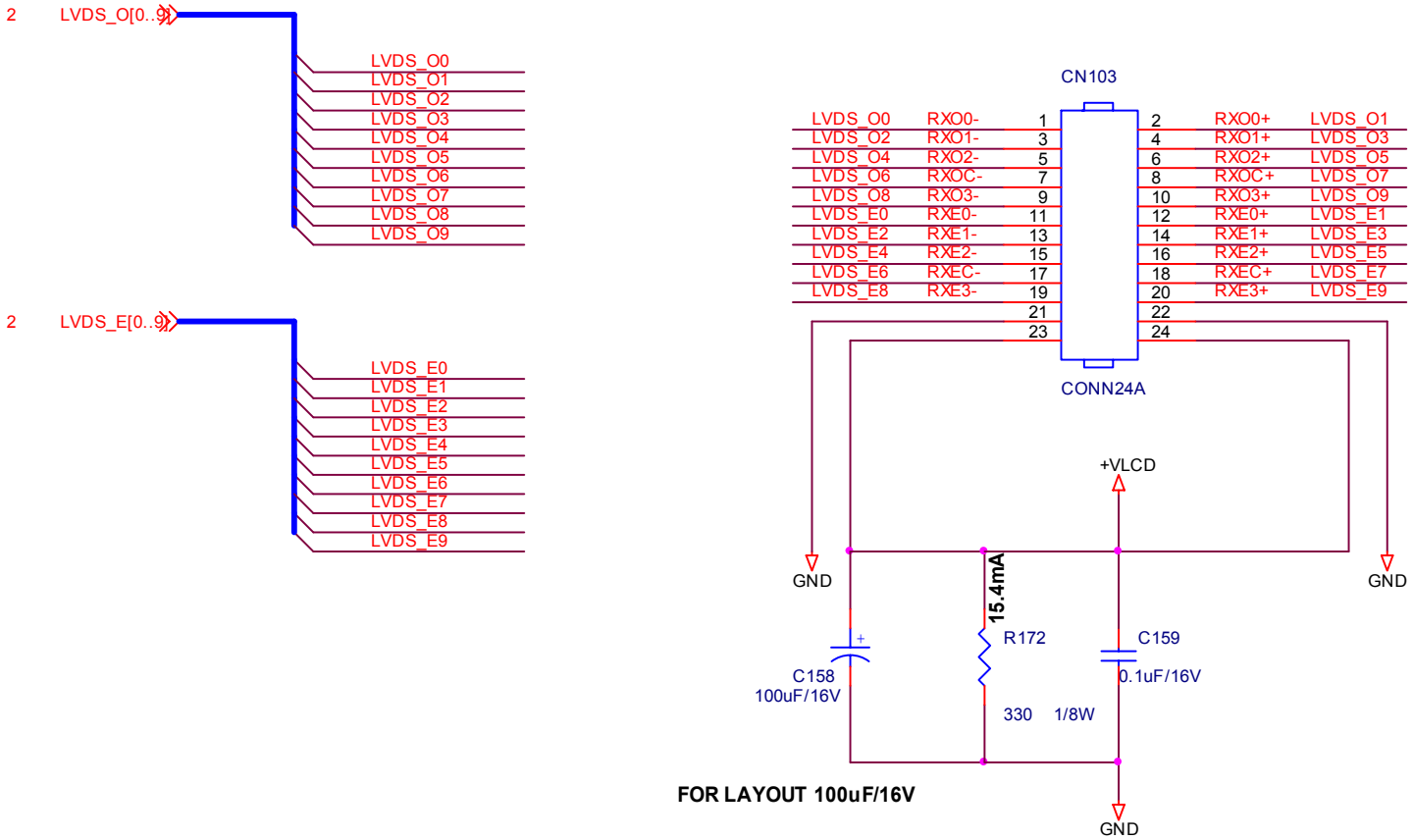

Title: PANEL INTERFACE		
Size: A	Document Number: Zan3 XL MAIN BOARD	Rev: E
Date: Thursday, July 08, 2004	Sheet 4 of 5	

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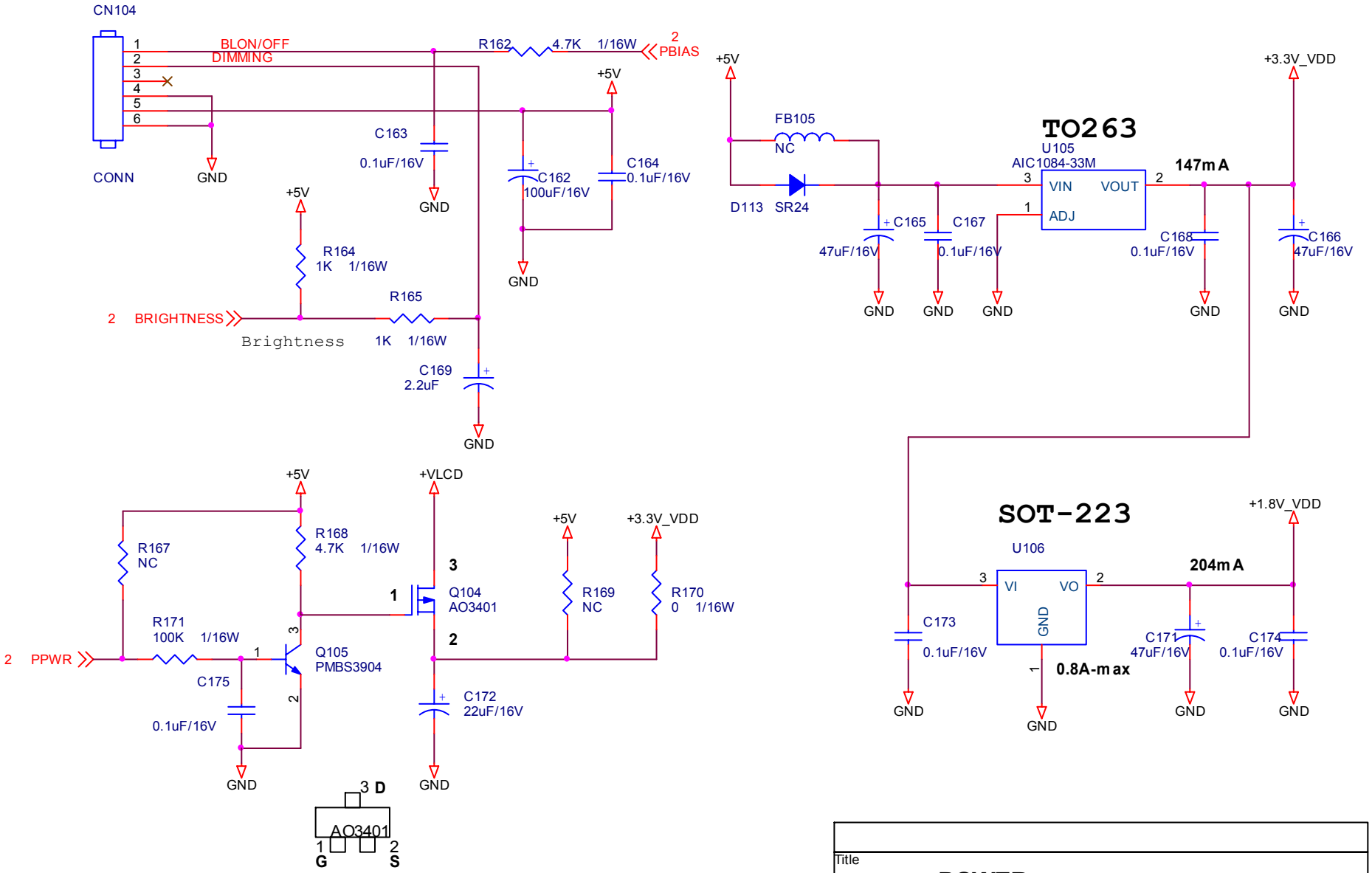

Title	POWER	
Size A	Document Number Zan3 XL MAIN BOARD	Rev E
Date: Thursday, July 08, 2004	Sheet 5 of 5	

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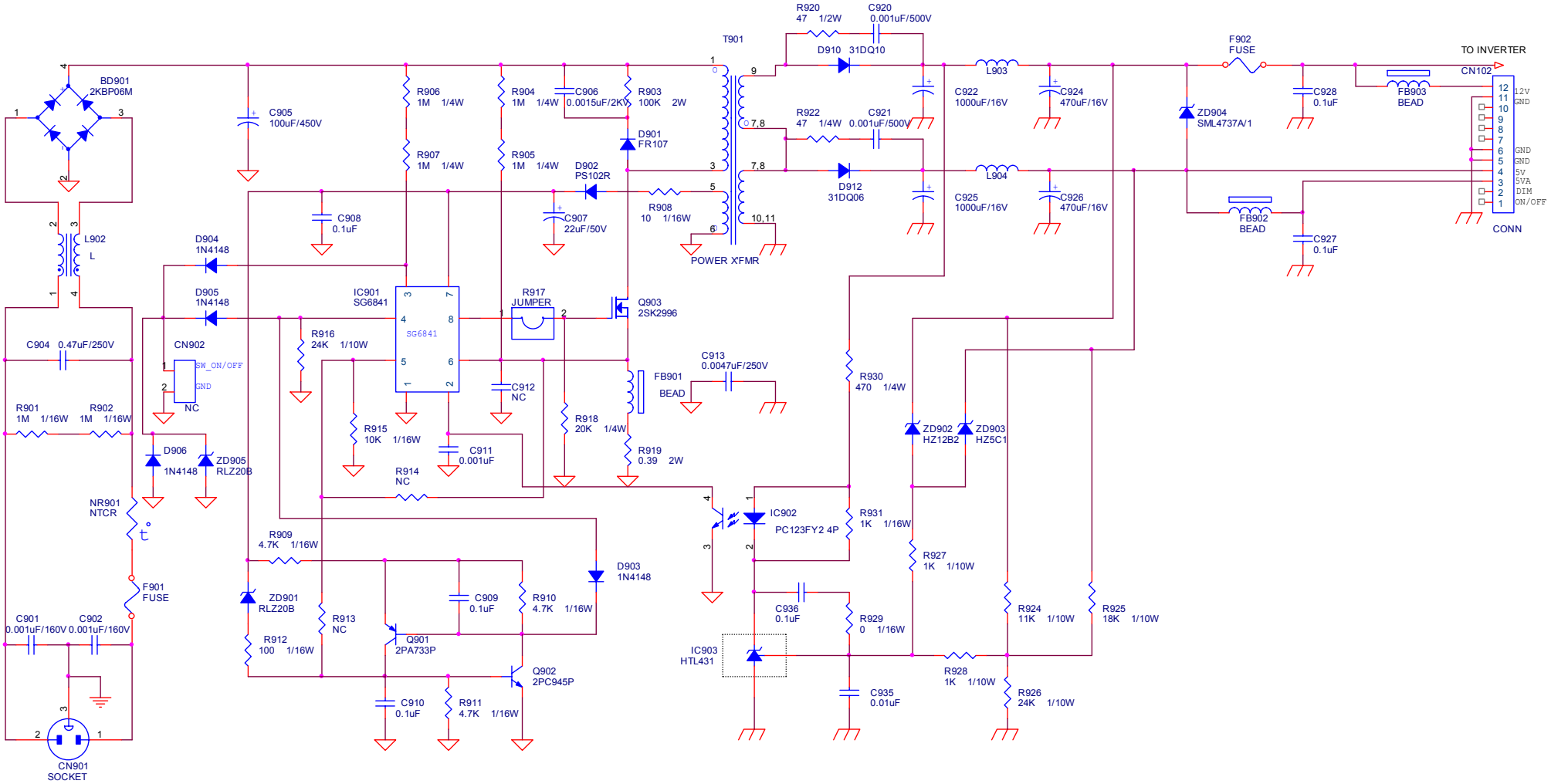
7.2 Power Board



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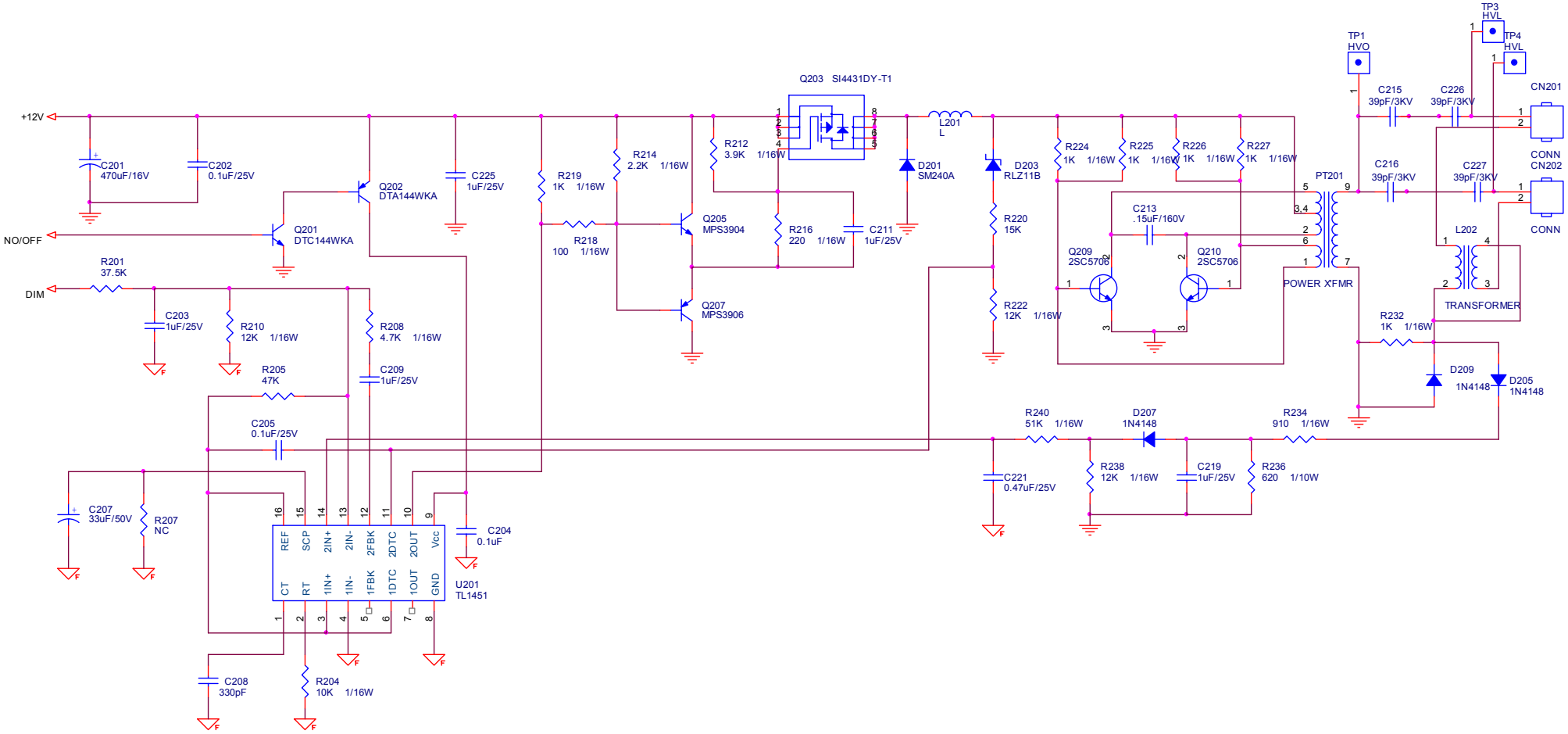

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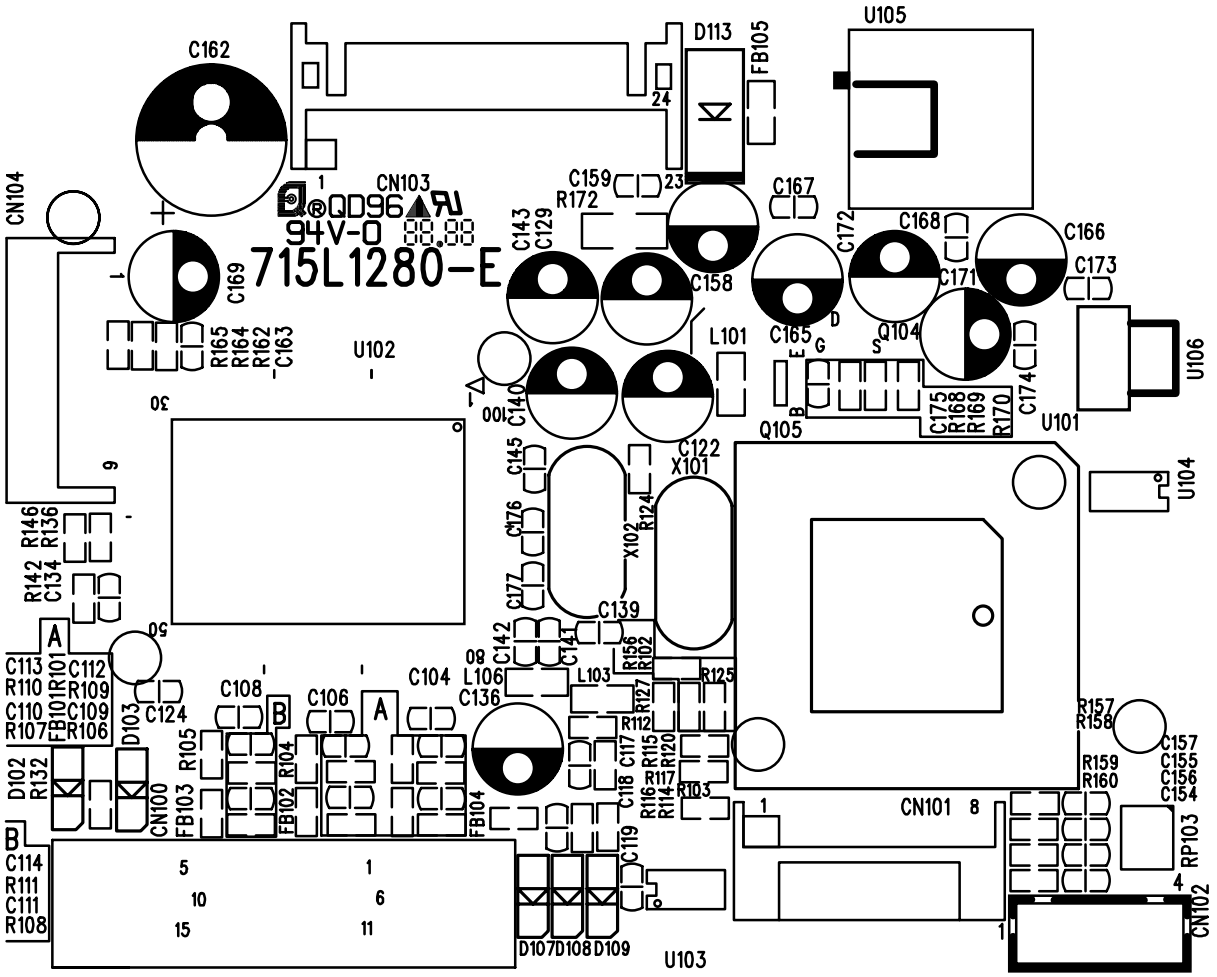
8. PCB Layout

8.1 Main Board



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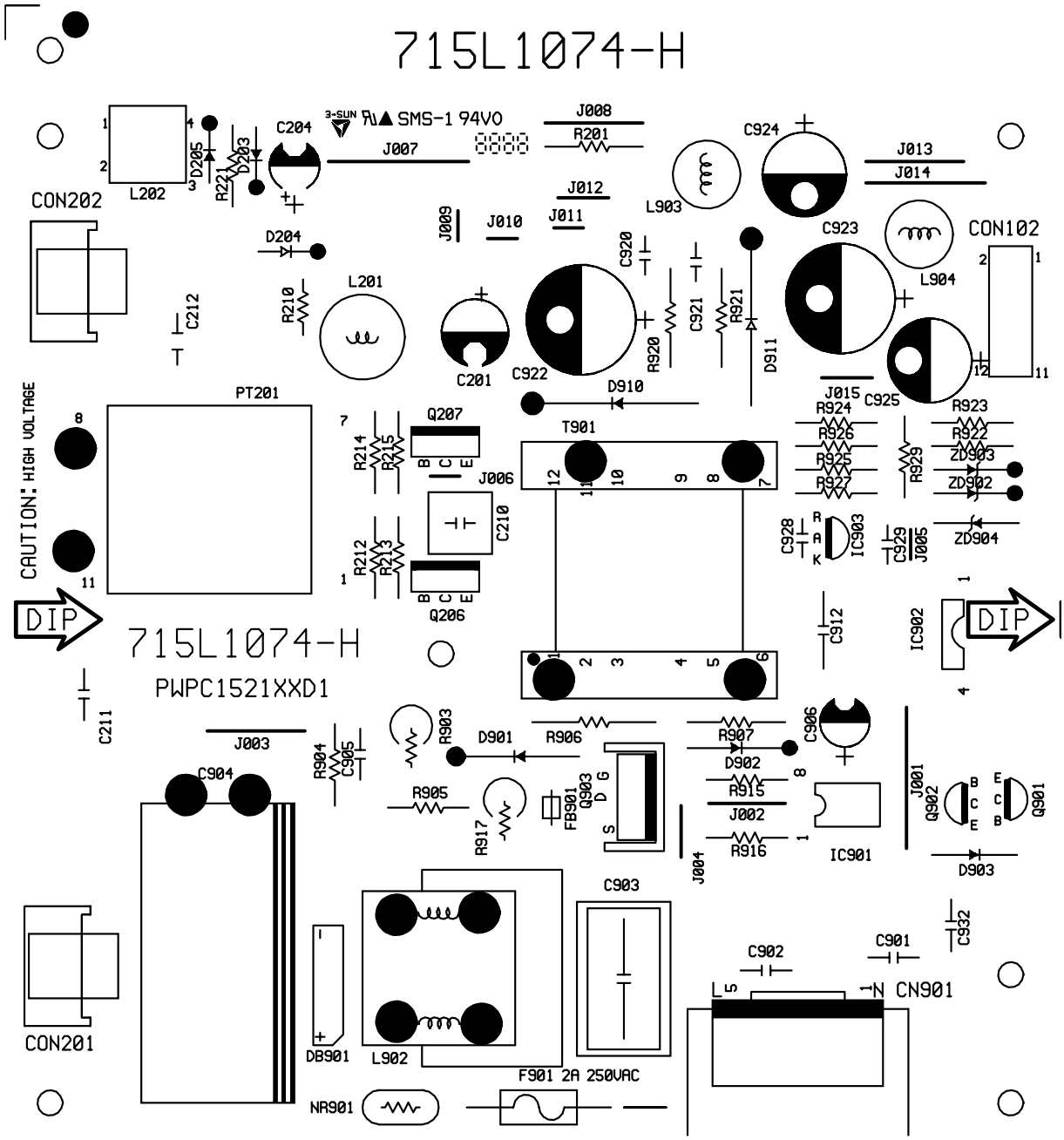
8.2 Inverter/Power Board



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9. Maintainability

9.1 Equipments and Tools Requirement

1. Voltage meter
2. Oscilloscope
3. Pattern Generator
4. LCD Color Analyzer
5. Service Manual
6. User Manual

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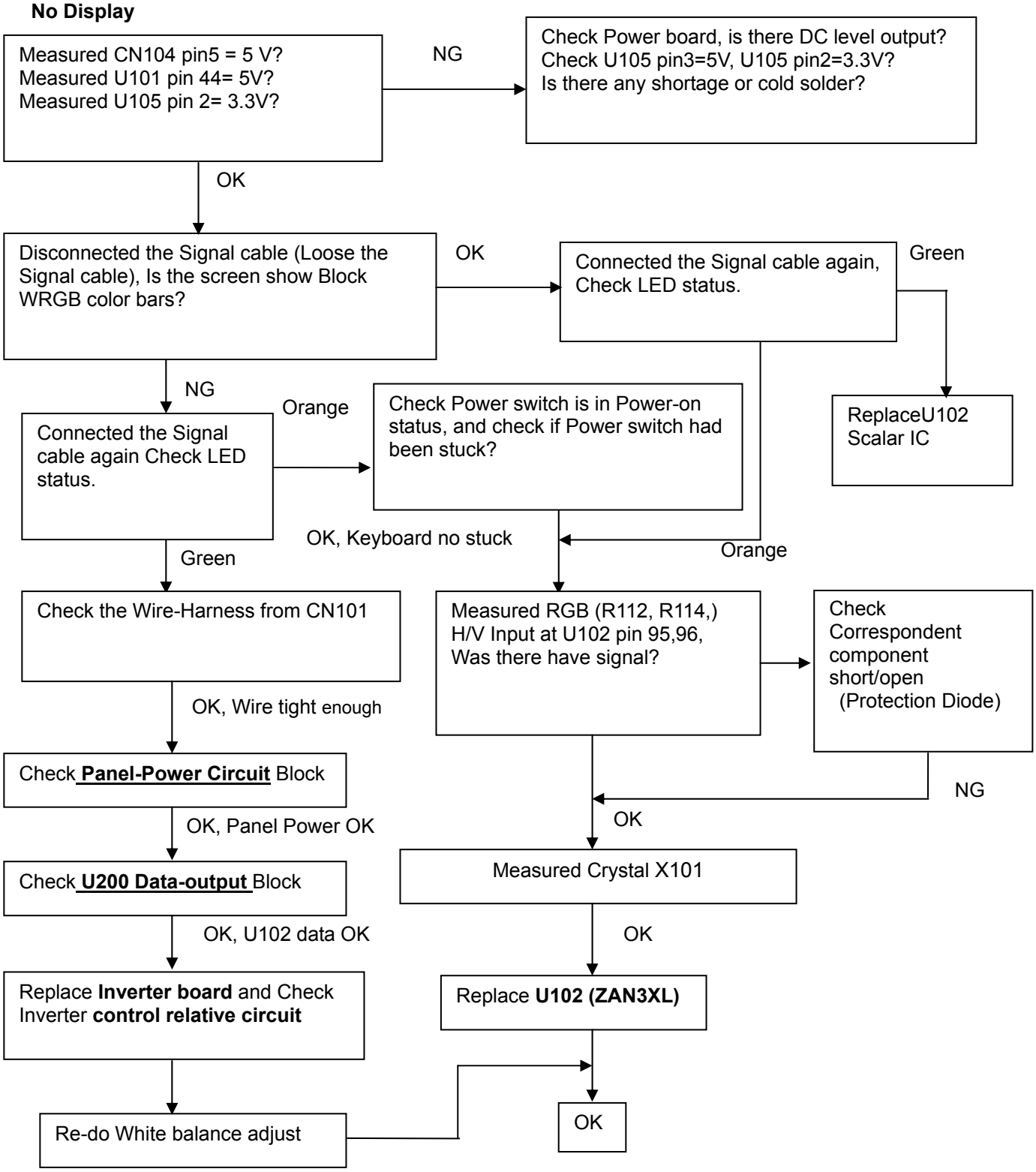
9.2 Trouble shooting

9.2.1 Main Board

No Display


Measured CN104 pin5 = 5 V?
Measured U101 pin 44= 5V?
Measured U105 pin 2= 3.3V?
NG
Check Power board, is there DC level output?
Check U105 pin3=5V, U105 pin2=3.3V?
Is there any shortage or cold solder?
OK
Disconnected the Signal cable (Loose the Signal cable), Is the screen show Block WRGB color bars?
OK
Connected the Signal cable again, Check LED status.
Green
ReplaceU102 Scalar IC
NG
Connected the Signal cable again Check LED status.
Orange
Check Power switch is in Power-on status, and check if Power switch had been stuck?
OK, Keyboard no stuck
Orange
Green
Check the Wire-Harness from CN101
Measured RGB (R112, R114,) H/V Input at U102 pin 95,96, Was there have signal?
Check Correspondent component short/open (Protection Diode)
OK, Wire tight enough
NG
Check Panel-Power Circuit Block
OK
OK, Panel Power OK
Measured Crystal X101
Check U200 Data-output Block
OK
OK, U102 data OK
Replace Inverter board and Check Inverter control relative circuit
Replace U102 (ZAN3XL)
OK
Re-do White balance adjust

Note: 1. If replace "**Main-Board**", Please re-do "DDC-content" programmed & "White-Balance".
2. If replace "**Power Board**" only, Please re-do " White-Balance"

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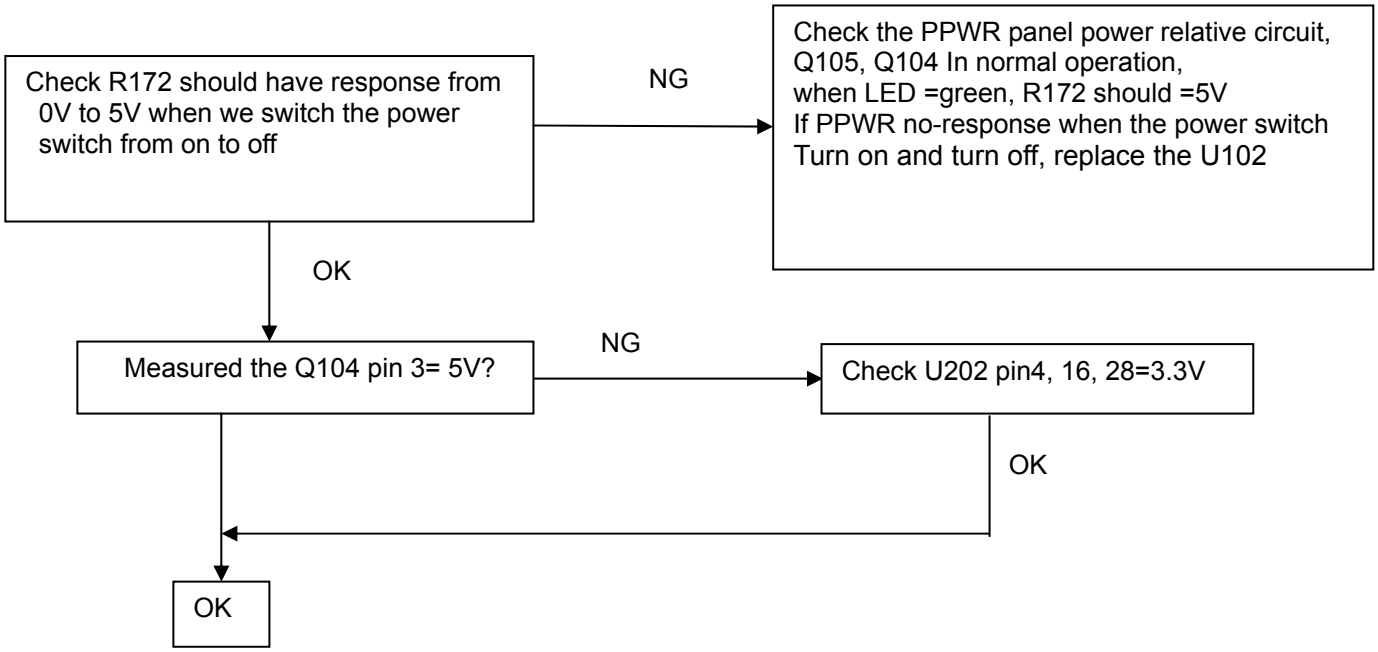
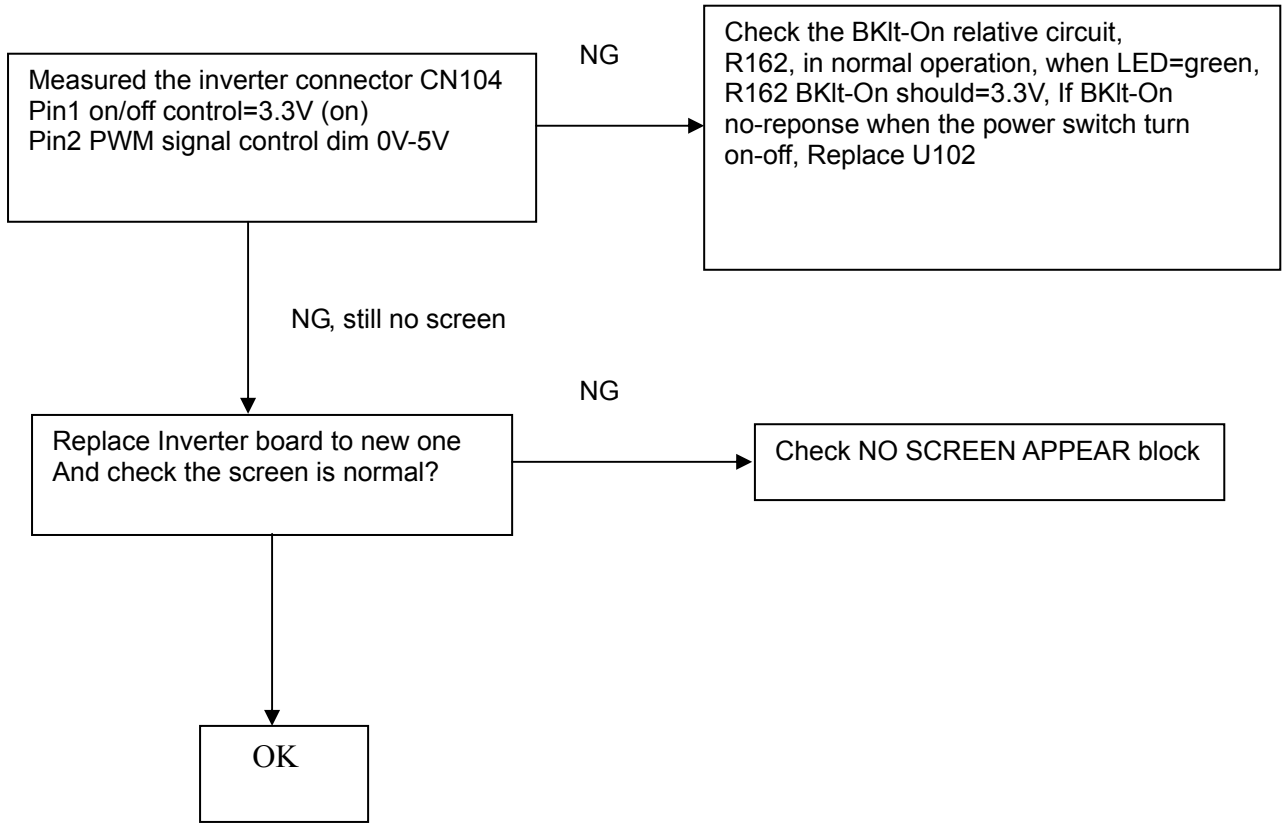
Panel Power Circuit


Check R172 should have response from 0V to 5V when we switch the power switch from on to off
NG
Check the PPWR panel power relative circuit, Q105, Q104 In normal operation, when LED =green, R172 should =5V
If PPWR no-response when the power switch Turn on and turn off, replace the U102
OK
Measured the Q104 pin 3= 5V?
NG
Check U202 pin4, 16, 28=3.3V
OK
OK

Inverter Control Relative Circuit


Measured the inverter connector CN104
Pin1 on/off control=3.3V (on)
Pin2 PWM signal control dim 0V-5V
NG
Check the BKlt-On relative circuit, R162, in normal operation, when LED=green, R162 BKlt-On should=3.3V, If BKlt-On no-reponse when the power switch turn on-off, Replace U102
NG, still no screen
NG
Replace Inverter board to new one And check the screen is normal?
Check NO SCREEN APPEAR block
OK

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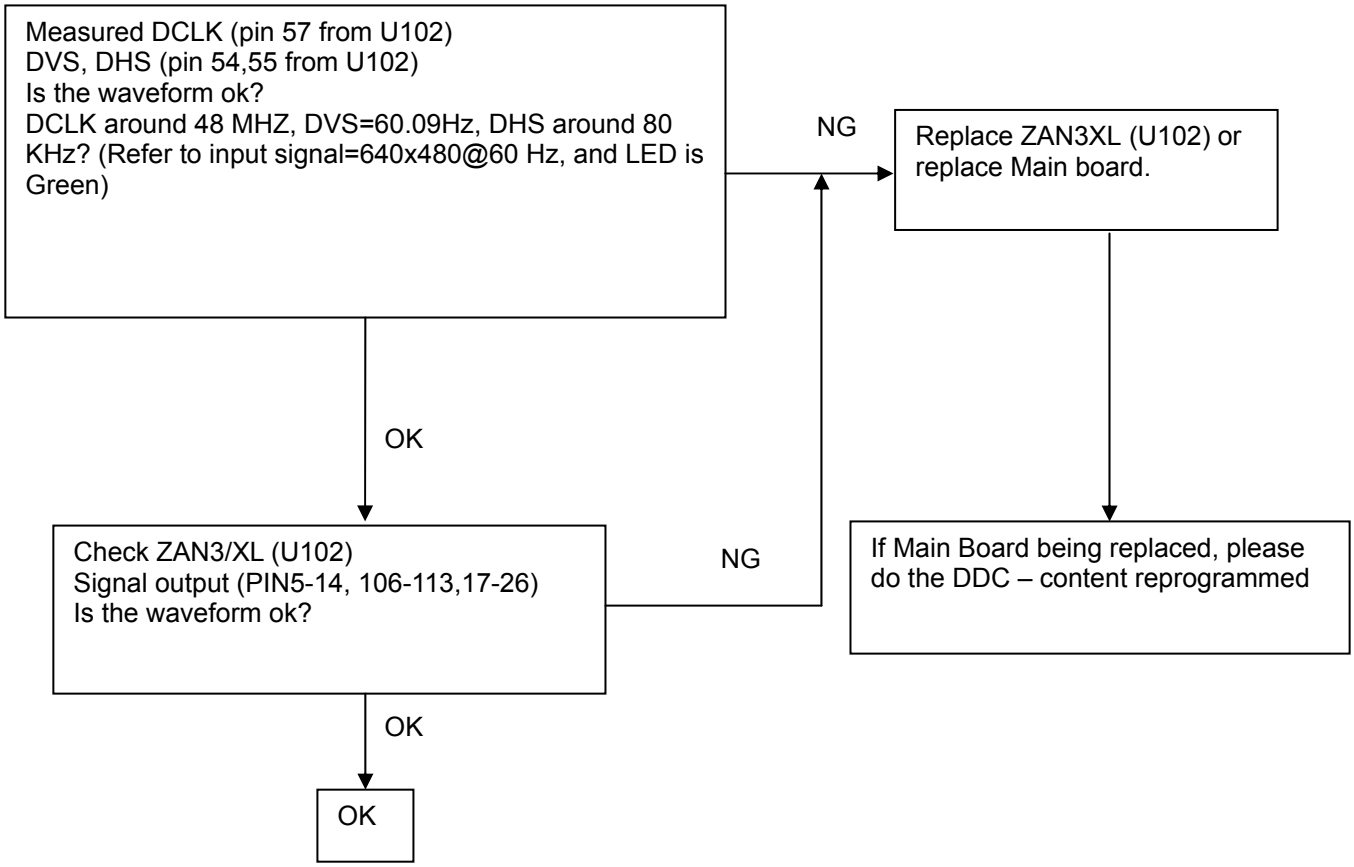
U102-date Output


Measured DCLK (pin 57 from U102)
DVS, DHS (pin 54,55 from U102)
Is the waveform ok?
DCLK around 48 MHZ, DVS=60.09Hz, DHS around 80 KHz? (Refer to input signal=640x480@60 Hz, and LED is Green)
NG
Replace ZAN3XL (U102) or replace Main board.
OK
Check ZAN3/XL (U102)
Signal output (PIN5-14, 106-113,17-26)
Is the waveform ok?
NG
If Main Board being replaced, please do the DDC – content reprogrammed
OK
OK

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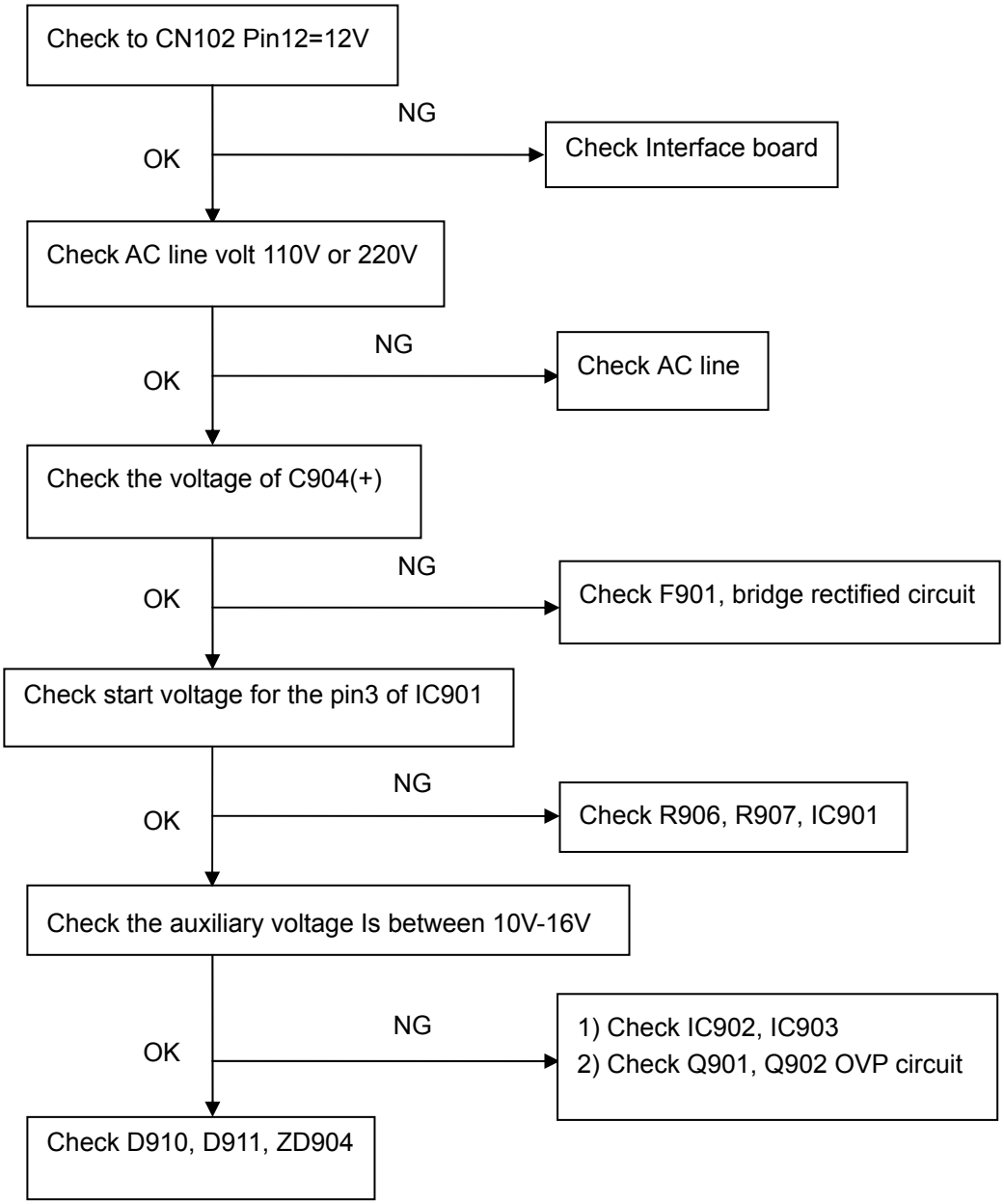
9.2.2 Inverter/Power Board

No Power



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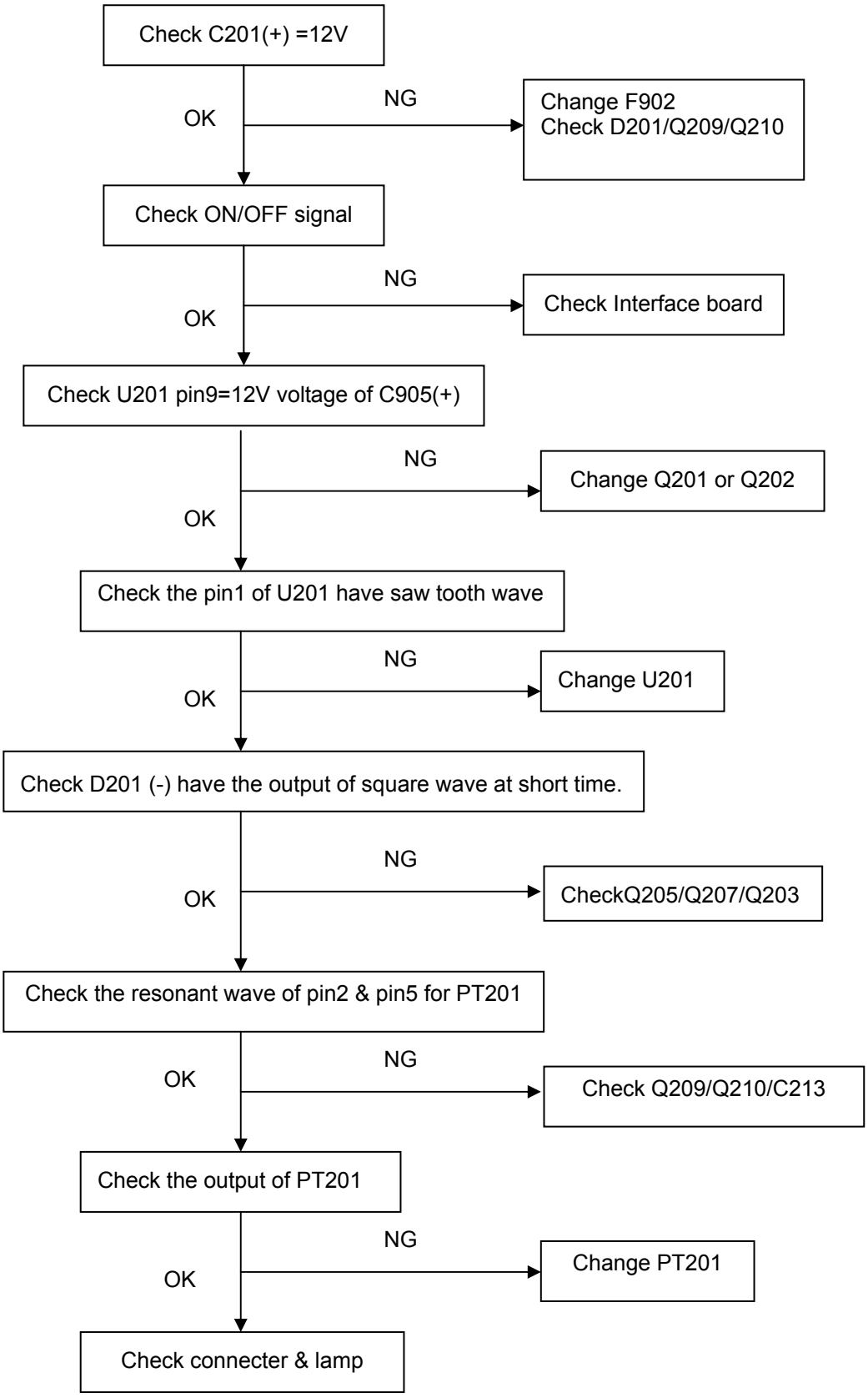
No Backlight



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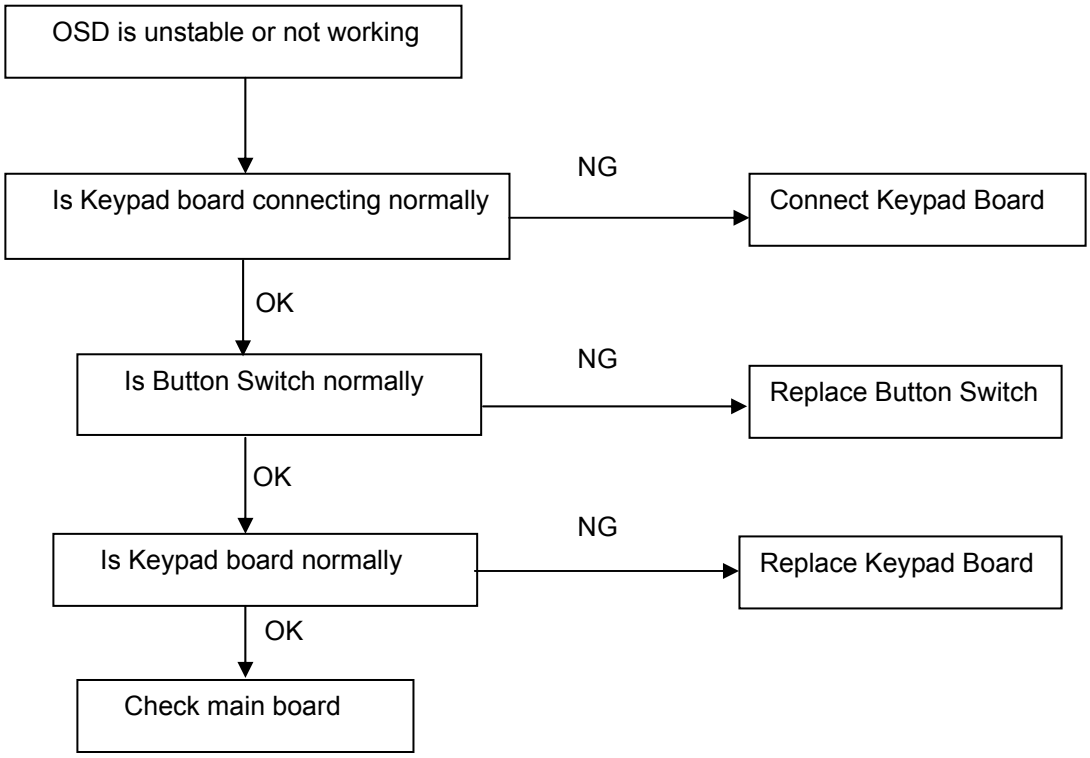
9.2.3 Key Board



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10. White balance, Luminance adjustment

Approximately 2 Hours should be allowed for warm up before proceeding White-Balance adjustment.

Before started adjust white balance, please setting the Chroma-7120 **MEM. Channel 3 to 6500^{0}K** colors, **MEM. Channel 4 to 9300^{0}K** colors, **MEM. Channel 9 to 5700^{0}K** (our 9300 parameter is x = 283 ±28, y = 297 ±28, Y = 175 ±20 cd/m^2, 6500 parameter is x = 313 ±28, y = 329 ±28, Y = 180 ±20 cd/m^2, and 5700 parameter is x = 328 ±28, y = 344 ±28, Y = 180 ±20 cd/m^2)

How to setting MEM.channel you can reference to chroma 7120 user guide or simple use " **SC"** key and " **NEXT"** key to modify xyY value and use **"ID"** key to modify the TEXT description Following is the procedure to do white-balance adjust

Press MENU and AUTO-ADJUST button during press Power button will activate the factory mode,

Gain adjustment:

Move cursor to "-Factory Setting-" and press MENU key to enter this sub-menu;

Move cursor to " Factory" and press MENU key;

Move cursor to " Auto Level" and press MENU key to adjust Gain and Offset automatically;

a. Adjust sRGB (6500^{0}K) color-temperature

1. Switch the chroma-7120 to **RGB-mode** (with press "MODE" button)
2. Switch the MEM.channel to Channel 3 (with up or down arrow on chroma 7120)
3. The LCD-indicator on chroma 7120 will show x = 313 ±28, y = 329 ±28, Y = 180 ±20 cd/m^2
4. Adjust the RED on OSD window until chroma 7120 indicator reached the value R=100
5. Adjust the GREEN on OSD, until chroma 7120 indicator reached G=100
6. Adjust the BLUE on OSD, until chroma 7120 indicator reached B=100
7. repeat above procedure (item 5,6,7) until chroma 7120 RGB value meet the tolerance =100±2

b. Adjust **Color1** (9300^{0}K) color-temperature

8. Switch the chroma-7120 to **RGB-mode** (with press "MODE" button)
9. Switch the MEM.channel to Channel 4 (with up or down arrow on chroma 7120)
10. The LCD-indicator on chroma 7120 will show x = 283 ±28, y = 297 ±28, Y = 175 ±20 cd/m^2
11. Adjust the RED on OSD window until chroma 7120 indicator reached the value R=100
12. Adjust the GREEN on OSD, until chroma 7120 indicator reached G=100
13. Adjust the BLUE on OSD, until chroma 7120 indicator reached B=100
14. Repeat above procedure (item 5,6,7) until chroma 7120 RGB value meet the tolerance =100±2

c. Adjust **Color2** (5700^{0}K) color-temperature

15. Switch the chroma-7120 to **RGB-mode** (with press "MODE" button)
16. Switch the MEM.channel to Channel 9 (with up or down arrow on chroma 7120)
17. The LCD-indicator on chroma 7120 will show x = 328 ±28, y = 344 ±28, Y = 180 ±20cd/m^2
18. Adjust the RED on OSD window until chroma 7120 indicator reached the value R=100
19. Adjust the GREEN on OSD, until chroma 7120 indicator reached G=100
20. Adjust the BLUE on OSD, until chroma 7120 indicator reached B=100
21. Repeat above procedure (item 5,6,7) until chroma 7120 RGB value meet the tolerance 100±2
22. Move cursor to " Exit/Save" sub-menu and press MENU key to save adjust value and exit.

Turn the POWER-button off to on to quit from factory mode.

Max Brightness measurement:

a. Switch to the full white pattern, in user mode main menu:
   1. Set <Color Settings> Red, Green, and Blue to the max.
   2. Set <Brightness> Brightness, Contrast to the max.
b. The Minimum brightness is 200cd/m^2 ±20.

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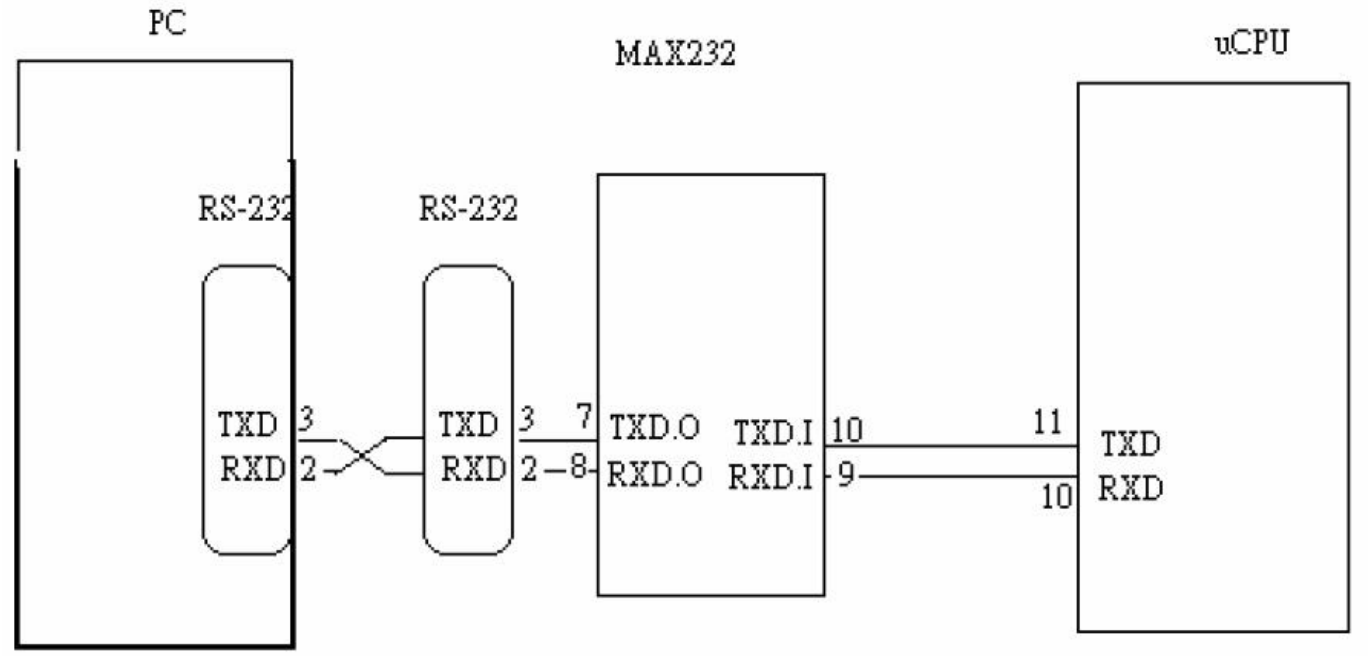
11. EDID Content

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
0 :	00	FF	FF	FF	FF	FF	FF	00	10	AC	0C	A0	43	31	30	30
16 :	08	0E	01	03	68	1E	17	78	2E	B0	60	A1	58	4F	95	26
32 :	16	50	54	AF	CE	00	01	01	01	01	01	01	01	01	01	01
48 :	01	01	01	01	01	01	64	19	00	40	41	00	26	30	18	88
64 :	36	00	30	E4	10	00	00	18	00	00	00	FF	00	36	34	31
80 :	38	30	33	39	43	30	30	31	43	0A	00	00	00	FD	00	38
96 :	4C	1E	3F	08	00	0A	20	20	20	20	20	20	00	00	00	FC
112:	00	44	45	4C	4C	20	45	31	35	33	46	50	0A	20	00	93

12. ISP (In System Program) User Manual

12.1 Connect ISP Writer preparation action

Connect RXD and TXD of PC to RXD (P3.0) and TXD (P3.1) of CPU through RS-232.



a. There are two ways to entering Reboot Mode. The settings for Reboot Mode is as follow

- Both P2.6 P2.7 are LOW and RESET pin is HIGHT.
- P4.3 is LOW and RESET pin is HIGHT.

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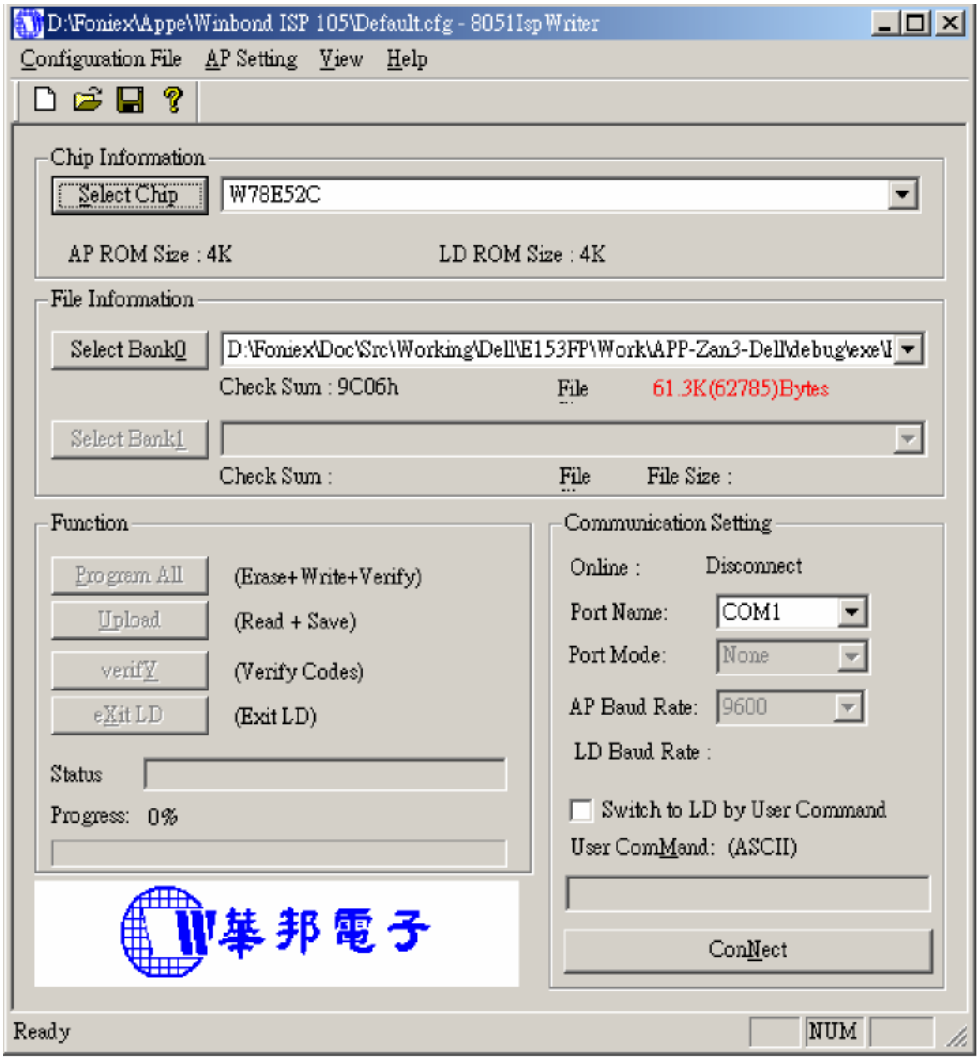
12.2 To Use ISP WRITER

Press the "–" key at front bezel and plug the AC power cord in, then the MCU enter ISP mode;

a. You will enter the window as follow after executing the ispwriter.exe file.



b. Click the "Select Chip" button, and choose the type you're going to program.

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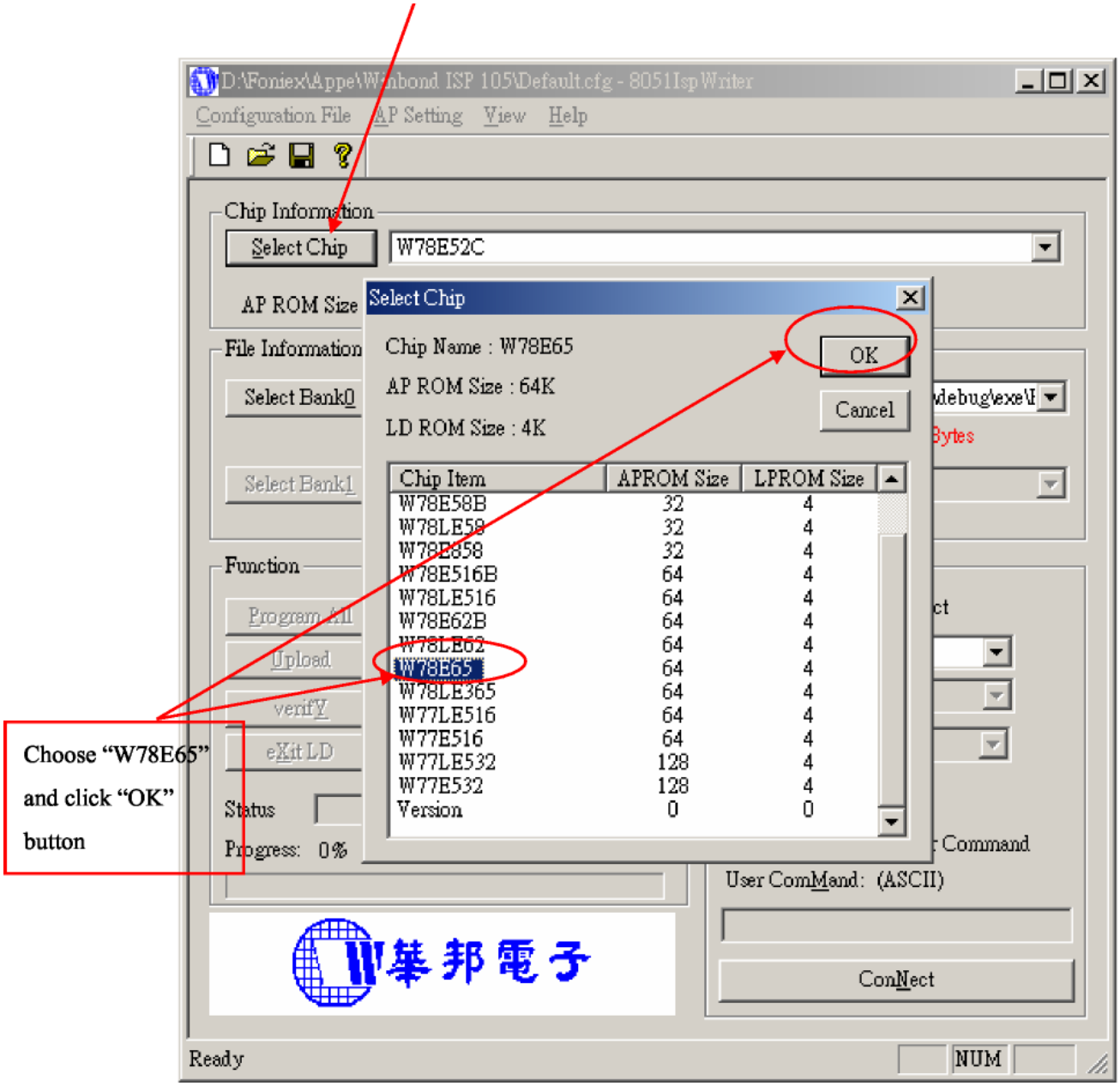

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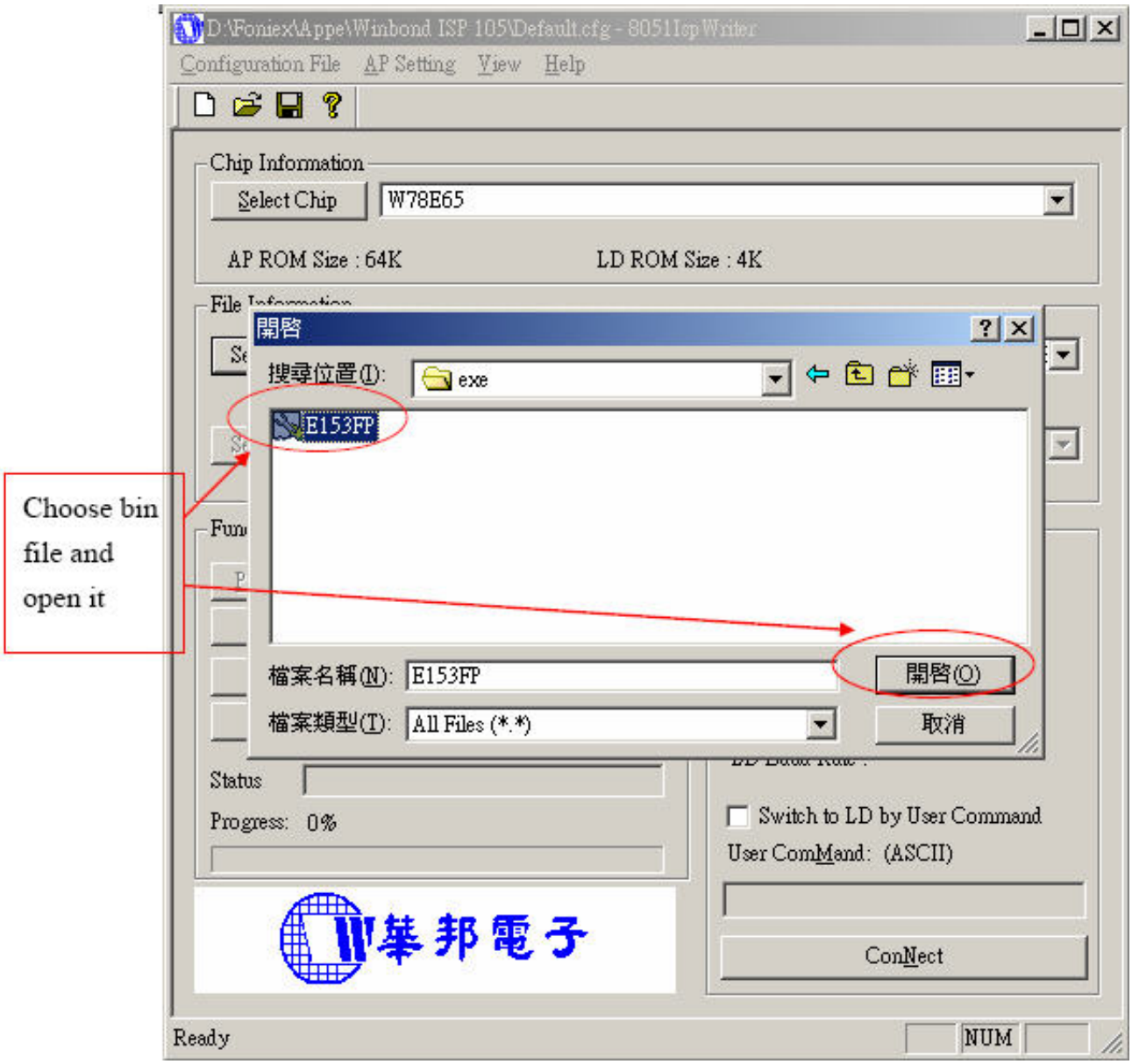
c. Click the “Select Bank0” button and selecting a file which a binary Format required.



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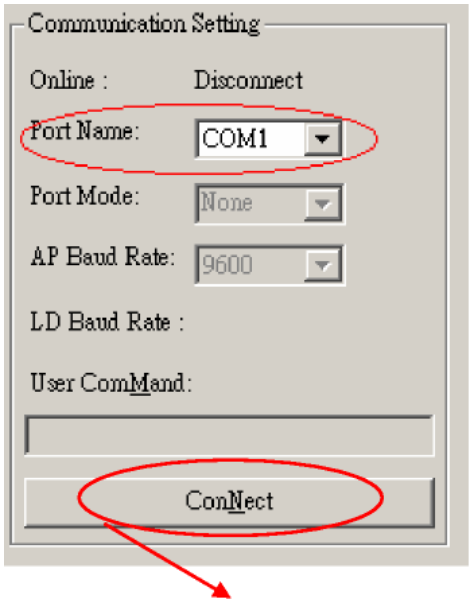
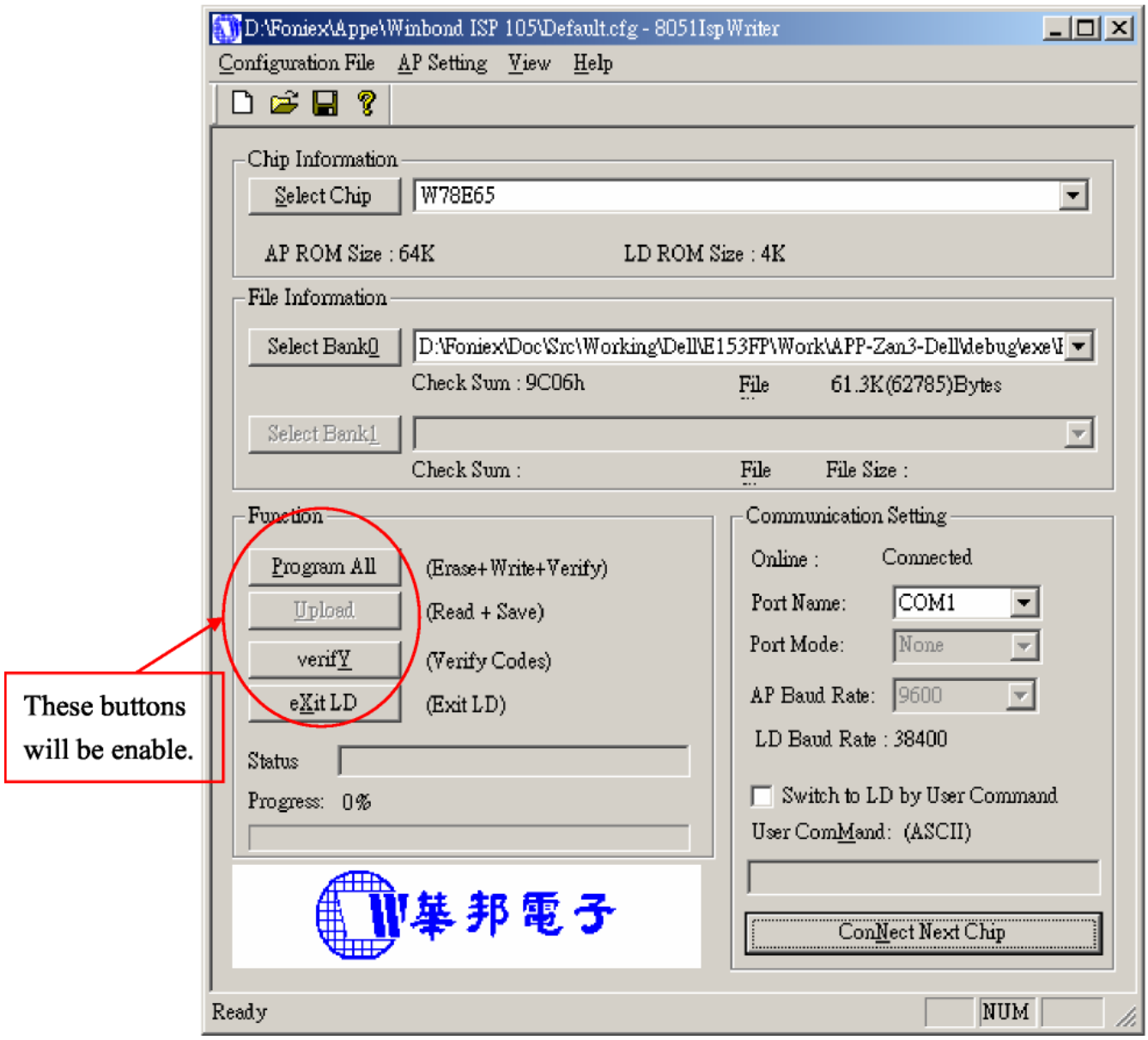
d. Select the communication Setting: Port Name



e. Click the “ConNect” button.



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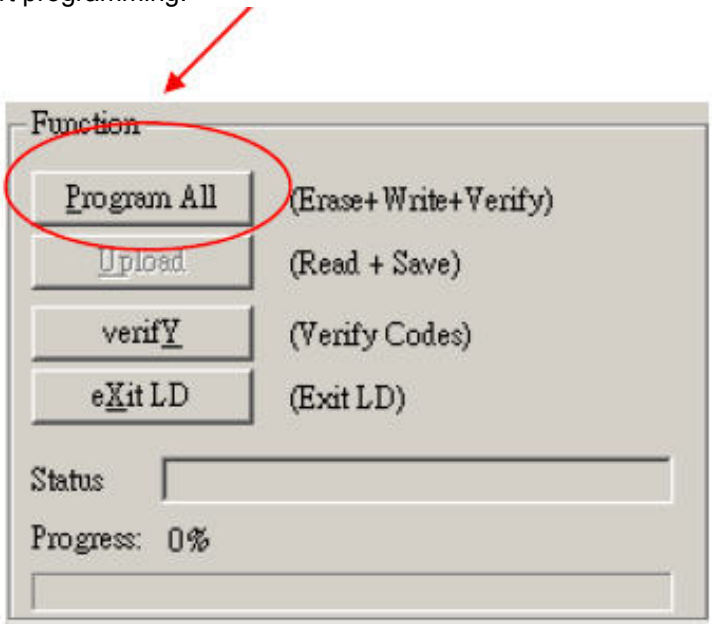
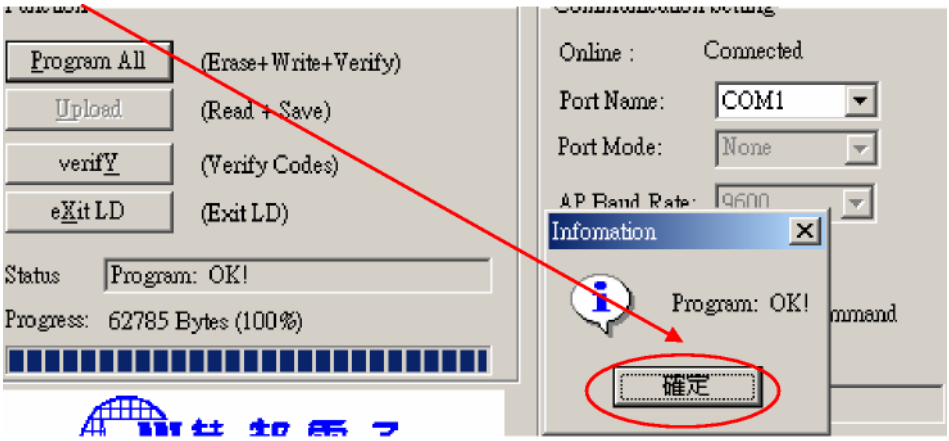
f. Click “Program all” to start programming.

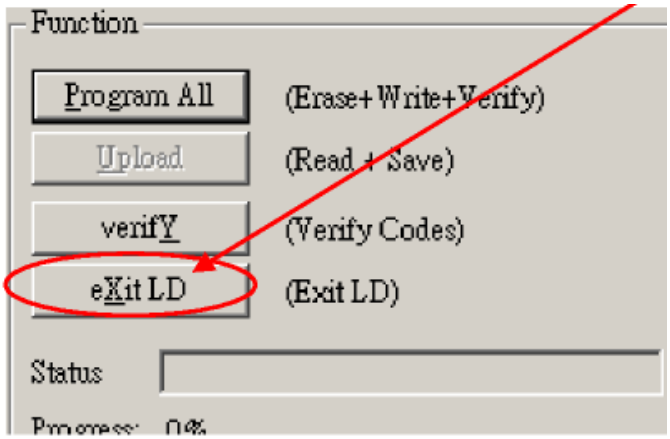


12.3. Executing ISP

a. “Program All” button that will execute erase and program and verify. Then you can get the window as follow, and click “OK” to complete ISP process.



b. Complete the ISP process, click“exit LD”button to reset monitor.



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13. BOM List

Different Parts List

Part NO	Description	Quantity	Unit	Remark
750LLC50G091ZB	CPT 15" 021 ZB PANEL	1	PCS	For T560KCLHM8DLN model
750LLC50G092ZB	CPT 15" 011 ZB PAMEL	1	PCS	For T560KCLHM8DRN model

For T560KCLHM8DRN model

Location	Part NO	Description	Quantity	Unit
	CBPC560KCDDN	CONVERSION BOARD	1	PCS
	KEPC560KDE1	KEY BOARD FOR T560K*DEL	1	PCS
	PWPC1521CPD1Q	POWER BOARD ASS'Y	1	PCS
	11L6036 1	SPACER SUPPORT SCC-24	1	PCS
	15L5941 1 B	MAIN FRAME	1	PCS
	23L3178700 1A	LOGO	1	PCS
	26L 800700 4A6444	BARCODE	1	PCS
	33L4669 GV C	POWER BUTTON	1	PCS
	33L4670 GV T	KEY PAD	1	PCS
	34L1228AY2 T	BEZEL	1	PCS
	34L1229 Y2 T	REAR COVER	1	PCS
	40L 150700 2C6855	ID LABEL	1	PCS
	40L 581700 3A	CARTON LABEL	1	PCS
	41G7800700 6B	QSG	1	PCS
	44G3574700 2A	CARTON	1	PCS
	44L3231 12 A	EVA WASHER	2	PCS
	44L3574 1	EPS(L R)	1	PCS
	44L3574 2	EPS (L R)	1	PCS
	45L 88607DE4	PE BAG FOR MONITOR	1	PCS
	52L 1186	SMALL TAPE	8	CM
	52L6020 2DE5	Protect film	1	PCS
	52L6022 1500	SMALL TAPE	12	CM
	70L1500700 2A	CD MANUAL	1	PCS
	85L 649 1	SHIELD	1	PCS
	85L6096 1	DIP-EMI	1	PCS
	85L6097 1	SHIELD INVERTER	1	PCS
	89L1738LAA 16	SIGNAL CABLE	1	PCS
	95G8018 14506	WIRE HARNESS	1	PCS
	D1L 330 4128	SCREW M3X4	4	PCS
	D1L 330 4128	SCREW M3X4	2	PCS
	M1G1740 6128	SCREW	1	PCS
	M1G2940 10225	SCREW	4	PCS
	M1L1430 6128	SCREW M3X6	4	PCS
	M1L1430 6128	SCREW M3X6	3	PCS
	Q1L 330 8120	SCREW 3X8mm	3	PCS
	705L 560 87 03	CN901 ASS'Y	1	PCS
	750LLC50G091ZB	CPT 15" 021 ZB PANEL	1	PCS
	AIC560KSDDN	MAIN BOARD	1	PCS

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	40L 457624 1B	CPU LABEL	1	PCS
	40L 45762412B	CBPC LABEL	1	PCS
C122	67L309V220 3	22UF +-20% 16V	1	PCS
C129	67L309V220 3	22UF +-20% 16V	1	PCS
C136	67L305S220 3H	22UF 16V MINI TYPE	1	PCS
C140	67L309V220 3	22UF +-20% 16V	1	PCS
C143	67L309V220 3	22UF +-20% 16V	1	PCS
C158	67L309V101 3	100UF 16V	1	PCS
C162	67L309V101 3	100UF 16V	1	PCS
C165	67L309V470 3	47UF 16V 85C	1	PCS
C166	67L309V470 3	47UF 16V 85C	1	PCS
C169	67L309V229 7	2.2UF +-20% 50V	1	PCS
C171	67L309V470 3	47UF 16V 85C	1	PCS
C172	67L309V220 3	22UF +-20% 16V	1	PCS
CN100	88L 35315F H	D-SUB 15PIN	1	PCS
CN101	33L3802 8H	WAFER 8P RIGHT ANGLE PI	1	PCS
CN103	33L8027 14 H	WAFER 14P 2.0MM DIP DUA	1	PCS
CN104	33L8013 6 H	6P PLUG R/A	1	PCS
U101A	56L1125522CD2	SYNCMOS MCU	1	PCS
X101	93G 22 53	CRYSTAL 14.318MHzHC-49U	1	PCS
X102	93G 22 53	CRYSTAL 14.318MHzHC-49U	1	PCS
	715L1280 E	PCB	1	PCS
C104	65L0603473 32	CHIP 0.047UF 50V X7R	1	PCS
C106	65L0603473 32	CHIP 0.047UF 50V X7R	1	PCS
C108	65L0603473 32	CHIP 0.047UF 50V X7R	1	PCS
C112	65L0603473 32	CHIP 0.047UF 50V X7R	1	PCS
C113	65L0603473 32	CHIP 0.047UF 50V X7R	1	PCS
C114	65L0603473 32	CHIP 0.047UF 50V X7R	1	PCS
C119	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C123	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C124	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C125	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C126	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C127	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C128	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C130	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C131	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C132	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C133	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C134	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C135	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C137	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C138	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C139	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C141	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C142	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C144	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C145	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS

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C147	65L0603220 31	CHIP 22PF 50V NPO	1	PCS
C148	65L0603220 31	CHIP 22PF 50V NPO	1	PCS
C149	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C150	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C152	65L0603102 32	1000PF +-10% 50V X7R	1	PCS
C153	65L0603102 32	1000PF +-10% 50V X7R	1	PCS
C154	65L0603102 32	1000PF +-10% 50V X7R	1	PCS
C155	65L0603102 32	1000PF +-10% 50V X7R	1	PCS
C156	65L0603102 32	1000PF +-10% 50V X7R	1	PCS
C157	65L0603102 32	1000PF +-10% 50V X7R	1	PCS
C159	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C163	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C164	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C167	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C168	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C173	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C174	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C175	65L0603104 12	0.1UF +-10% 16V X7R	1	PCS
C176	65L0603220 31	CHIP 22PF 50V NPO	1	PCS
C177	65L0603220 31	CHIP 22PF 50V NPO	1	PCS
D101	93L 6433P	BAV99	1	PCS
D102	93G 39147	TZMC5V6	1	PCS
D103	93G 39147	TZMC5V6	1	PCS
D104	93G 39147	TZMC5V6	1	PCS
D105	93L 6433P	BAV99	1	PCS
D106	93L 6433P	BAV99	1	PCS
D107	93G 39147	TZMC5V6	1	PCS
D108	93G 39147	TZMC5V6	1	PCS
D109	93G 39147	TZMC5V6	1	PCS
D110	93G 64 42 P	BAV70 SOT-23	1	PCS
D111	93G 39147	TZMC5V6	1	PCS
D112	93G 39147	TZMC5V6	1	PCS
D113	93L2004 2	SR24/PANJIT-SMT	1	PCS
FB101	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
FB102	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
FB103	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
FB104	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
L101	71L 56K121 M	CHIP BEAD	1	PCS
L102	71L 56K121 M	CHIP BEAD	1	PCS
L103	71L 56K121 M	CHIP BEAD	1	PCS
L104	71L 56K121 M	CHIP BEAD	1	PCS
L105	71L 56K121 M	CHIP BEAD	1	PCS
L106	71L 56K121 M	CHIP BEAD	1	PCS
Q101	57L 417 4	PMBS3904/PHILIPS-SMT(04	1	PCS
Q102	57L 417 4	PMBS3904/PHILIPS-SMT(04	1	PCS
Q104	57L 763 1	A03401 SOT23 BY AOS(A1)	1	PCS
Q105	57L 417 4	PMBS3904/PHILIPS-SMT(04	1	PCS
R101	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS

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R102	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R104	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R105	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R106	61L0603750 9F	75OHM 1% 1/10W	1	PCS
R107	61L0603750 9F	75OHM 1% 1/10W	1	PCS
R108	61L0603750 9F	75OHM 1% 1/10W	1	PCS
R109	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R110	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R111	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R112	61L0603470	CHIPR 47 OHM +-5% 1/10W	1	PCS
R114	61L0603470	CHIPR 47 OHM +-5% 1/10W	1	PCS
R115	61L0603222	CHIPR 2.2K OHM+-5% 1/10	1	PCS
R116	61L0603222	CHIPR 2.2K OHM+-5% 1/10	1	PCS
R117	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R118	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R119	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R120	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R122	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R123	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R125	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R126	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R127	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R128	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R129	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R130	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R131	61L0603272	CHIP 2.7K OHM 1/10W	1	PCS
R132	61L0603272	CHIP 2.7K OHM 1/10W	1	PCS
R133	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R134	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R135	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R137	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R139	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R141	61L0603101	CHIPR 100 OHM +-5% 1/10	1	PCS
R142	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
R143	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R144	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R146	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
R147	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R148	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R154	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R155	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R156	61L0603473	CHIP 47K OHM 1/10W	1	PCS
R157	61L0603221	CHIPR 220 OHM+-5% 1/10W	1	PCS
R158	61L0603221	CHIPR 220 OHM+-5% 1/10W	1	PCS
R159	61L0603221	CHIPR 220 OHM+-5% 1/10W	1	PCS
R160	61L0603221	CHIPR 220 OHM+-5% 1/10W	1	PCS
R161	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R162	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS

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R163	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R164	61L0603102	CHIPR 1K OHM +-5% 1/10W	1	PCS
R165	61L0603102	CHIPR 1K OHM +-5% 1/10W	1	PCS
R168	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R170	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
R171	61L0603104	CHIPR 100K OHM +-5% 1/1	1	PCS
R172	61L1206331	CHIP 330OHM 5% 1/4W	1	PCS
R173	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
RP103	61L 125472 8	CHIP AR 8P4R 4.7K OHM+-	1	PCS
U101	87L 202 44	PLCC SMT CONN PD41C-441	1	PCS
U102	56L 562 62	GMZAN3/XL PQFP-100	1	PCS
U103	56L1133 34	M24C02-WMN6T SMT	1	PCS
U104	56L1133 56	M24C16-WMN6T/W SO-8	1	PCS
U105	56L 563 7	AIC1084-33CM	1	PCS
U106	56L 563 27	AIC1117A-18CY SOT-223	1	PCS
	715L1153 1A	PCB	1	PCS
CN101	95G8014 8 6	HARNESS 28CM	1	PCS
DP101	81L 12 1A GP	LED	1	PCS
R101	61L 60210152T	100OHM +- 5% 1/6W	1	PCS
SW101	77L 600 4 HJ	TACT SWITCH TSPE-1	1	PCS
SW102	77L 600 4 HJ	TACT SWITCH TSPE-1	1	PCS
SW103	77L 600 4 HJ	TACT SWITCH TSPE-1	1	PCS
SW104	77L 600 4 HJ	TACT SWITCH TSPE-1	1	PCS
	PW1521SED1SMT	POWER BOARD FO SMT	1	PCS
	40L 45762420A	ID LABEL	1.03	PCS
	705L 560 57 17	Q903 ASS'Y	1	PCS
	705L 560 61 05	R917 ASS'Y	1	PCS
	705L 780 57 08	D911 ASS'Y	1	PCS
	705L 780 57 09	D910 ASS'Y	1	PCS
	705L1521 HL	LCD ASS'Y	1	PCS
C211	65L 3J2206ET	22PF 5% 3KV TDK	1	PCS
C212	65L 3J2206ET	22PF 5% 3KV TDK	1	PCS
C901	65L305M1022EM	1000PF +-20% 250VAC/400	1	PCS
C902	65L305M1022EM	1000PF +-20% 250VAC/400	1	PCS
C904	67L215S10115K	100UF 450V	1	PCS
C922	67L215C102 3H	EC LESR 1000UF16V HERME	1	PCS
C923	67L 215102 3H	1000UF +-20% 16V	1	PCS
CN901	33G8029 5A	WAFER	1	PCS
CON10	2 95G8014 6 19	WIRE HARNESS	1	PCS
CON20	1 33L8020 2D AC	CONN.2P R/A DIP BY ACES	1	PCS
CON20	2 33L8020 2D AC	CONN.2P R/A DIP BY ACES	1	PCS
FB901	71L 55 29	FERRITE BEAD	1	PCS
IC902	56L 139 3B	PC123 Y82	1	PCS
L201	73L 253139 YL	CHOKE	1	PCS
L202	73L 174 30YSA	FILTER	1	PCS
L902	73L 174 26 LS	COMMON CHOKE	1	PCS
L903	73L 253 91 LS	CHOKE BY LI SHIN	1	PCS
L904	73L 253 91 LS	CHOKE BY LI SHIN	1	PCS

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NR901	61L 58120 WT	NTCR 12OHM 20% 2A SCK-1	1	PCS
PT201	80LL15T 7DNG	X'FMR	1	PCS
Q206	57G 761 6	2SC5706-P-E	1	PCS
Q207	57G 761 6	2SC5706-P-E	1	PCS
T901	80LL17T 2 T	X'FMR	1	PCS
	PWPC1521SED1AI	POWER BOARD FOR AI	1	PCS
C202	65L0805104 22	0.1UF +-10% 25V X7R 080	1	PCS
C203	65L0805104 22	0.1UF +-10% 25V X7R 080	1	PCS
C205	65L0805104 22	0.1UF +-10% 25V X7R 080	1	PCS
C206	65L0805331 31	CHIP 330pF 50V NPO	1	PCS
C208	65L0805474 22	CHIP 0.47UF 25V X7R 080	1	PCS
C209	65L0805105 22	CHIP 1UF 25V X7R 0805	1	PCS
C213	65L0805105 22	CHIP 1UF 25V X7R 0805	1	PCS
C214	65L0805474 22	CHIP 0.47UF 25V X7R 080	1	PCS
C907	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C908	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C909	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C910	65L0805102 32	CHIP 1000P 50VX7R 0805	1	PCS
C926	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C927	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C930	65L0805102 32	CHIP 1000P 50VX7R 0805	1	PCS
C931	65L0805102 32	CHIP 1000P 50VX7R 0805	1	PCS
D201	93L2004 2A	SM240A DO-214AC	1	PCS
D202	93L 39S 8 T	ZD RLZ11B ROHM	1	PCS
F201	61L1206000 4	0 OHM 4A 1/4W	1	PCS
Q201	57L 760 5B	PDTC144WK SOT346	1	PCS
Q202	57L 760 4B	PDTA144WK SOT 346	1	PCS
Q203	57L 763 3	AO4411 SO-8 BY AOS SMT	1	PCS
Q204	57L 417 4	PMBS3904/PHILIPS-SMT(04	1	PCS
Q205	57L 417 6	PMBS3906/PHILIPS-SMT(06	1	PCS
R202	61L0603103	CHIPR 10K OHM +-5% 1/10	1	PCS
R203	61L0603623	CHIPR 62K OHM +-5% 1/10	1	PCS
R205	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R206	61L0603123	CHIP 12K OHM 1/10W	1	PCS
R207	61L0603392	CHIP 3.9K OHM 1/10W	1	PCS
R208	61L0603221	CHIPR 220 OHM+-5% 1/10W	1	PCS
R209	61L0603392	CHIP 3.9K OHM 1/10W	1	PCS
R211	61L0603123	CHIP 12K OHM 1/10W	1	PCS
R216	61L0603681	CHIP 680 OHM 1/10W	1	PCS
R217	61L0603471	CHIPR 470 OHM+-5% 1/10W	1	PCS
R218	61L0603123	CHIP 12K OHM 1/10W	1	PCS
R219	61L0603513	CHIP 51K OHM 1/10W	1	PCS
R220	61L0603471	CHIPR 470 OHM+-5% 1/10W	1	PCS
R222	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
R223	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
R901	61L1206105	CHIP 1MOHM 5% 1/4W	1	PCS
R902	61L1206105	CHIP 1MOHM 5% 1/4W	1	PCS
R908	61L1206519	CHIPR 5.1OHM +-5% 1/4W	1	PCS

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R909	61L1206472	CHIP 4.7KOHM 5% 1/4W	1	PCS
R910	61L1206472	CHIP 4.7KOHM 5% 1/4W	1	PCS
R911	61L1206472	CHIP 4.7KOHM 5% 1/4W	1	PCS
R912	61L1206101	CHIP 100 OHM 5% 1/4W	1	PCS
R913	61L1206103	CHIP 10KOHM 5% 1/4W	1	PCS
R914	61L1206243	CHIP 24K OHM 5% 1/4W	1	PCS
R928	61L1206102	CHIP 1K OHM 5% 1/4W	1	PCS
U201	56L 608 1	TL1451ACD	1	PCS
ZD901	93L 39S 12 T	RLZ20B BY ROHM	1	PCS
ZD904	93L 39S 19 T	PTZ7.5B	1	PCS
	715L1074 1	PCB	1	PCS
C201	67L215C1514HT	LOW ESR 150UF 25V 8*7MM	1	PCS
C204	67L 305330 7T	33UF 105	1	PCS
C904	6L 31502	1.5MM RIVET	2	PCS
C905	65L 2K152 1T6921	1.5NF/2KV Y5P +-10%	1	PCS
C906	67L 305220 7T	22UF +-20% 50V	1	PCS
C920	65L517K102 5T	1000PF 10% Y5P 500V	1	PCS
C921	65L517K102 5T	1000PF 10% Y5P 500V	1	PCS
C924	67L215B4713HT	470UF 16V LTR471M1CF11V	1	PCS
C925	67L215B4713HT	470UF 16V LTR471M1CF11V	1	PCS
C929	64L700J1040AT	0.1UF 50V PEN	1	PCS
D203	93L 64 1152T	1N4148	1	PCS
D204	93L 64 1152T	1N4148	1	PCS
D205	93L 64 1152T	1N4148	1	PCS
D901	93L 6026T52T	RECTIFIER DIODE FR107	1	PCS
D902	93L 6038T52T	FR103	1	PCS
D903	93L 64 1152T	1N4148	1	PCS
IC903	56L 158 4 T A	H431BA	1	PCS
L902	6L 31502	1.5MM RIVET	4	PCS
PT201	6L 31502	1.5MM RIVET	2	PCS
Q901	57L 420 PP T	2PA733P	1	PCS
Q902	57L 419 PP T	2PC945P	1	PCS
R201	61L 60239352T	39K OHM 5% 1/6W	1	PCS
R210	61L 60215352T	15KOHM 5% 1/6W	1	PCS
R212	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R213	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R214	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R215	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R221	61L 17210252T	1K OHM 5% 1/4W	1	PCS
R904	61L214Y10552T	1M,1/4W	1	PCS
R905	61L214Y10552T	1M,1/4W	1	PCS
R906	61L214Y75452T	750KOHM 5% 1/4W	1	PCS
R907	61L214Y75452T	750KOHM 5% 1/4W	1	PCS
R915	61L 17210052T	100HM 5% 1/4W	1	PCS
R916	61L 17210352T	CFR 10KOHM +-5% 1/4W	1	PCS
R920	61L175L47052T	47OHM +-5% 1/2W	1	PCS
R921	61L175L47052T	47OHM +-5% 1/2W	1	PCS
R922	61G 20033352T	33KOHM 1% 1/4W	1	PCS

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R923	61G 20036252T	3.6KOHM 1% 1/4W	1	PCS
R924	61G 20024252T	2.4KOHM 1% 1/4W	1	PCS
R925	61L 17210252T	1K OHM 5% 1/4W	1	PCS
R926	61L 17210252T	1K OHM 5% 1/4W	1	PCS
R929	61L 17210152T	100 OHM 5% 1/4W	1	PCS
T901	6L 31502	1.5MM RIVET	4	PCS
ZD902	93L 39 5452T	ZENER HZ12B2	1	PCS
ZD903	93L 39 7752T	ZENER HZ5C1	1	PCS
	90L 411501	HEAT SINK	1	PCS
	M1L1730 8128	SCREW M3x8	1	PCS
Q903	57G 600 35	STP8NK80ZFP	1	PCS
	96L 29 6	SHRINK TUBE UL/CSA	1	PCS
R917	61L 2J39858H	0.390OHM 5% 2W	1	PCS
	90L 410 2	HEAT SINK	1	PCS
D911	93L3006 1 A	31DQ06	1	PCS
	90L6115 1	heat sink	1	PCS
D910	93L3020 18	RL4Z	1	PCS
C903	63L 107474 HS	0.47UF +-10% 250VAC	1	PCS
DB901	93L 50460502	KBP206G	1	PCS
F901	84L 7H200 SL	250V/2A LIHEL FUSE	1	PCS
IC901	56L 379 32	SG6841D BY SYSTEM	1	PCS
R903	61L152M10458F	100K OHM 5% 2W	1	PCS
	PW1521CPD1QSMT	POWER BOARD FOR SMT	1	PCS
	40L 45762420A	ID LABEL	1	PCS
	705L 560 57 21	Q903 ASS'Y	1	PCS
	705L 560 61 05	R917 ASS'Y	1	PCS
	705L 780 57 08	D911 ASS'Y	1	PCS
	705L 780 57 09	D910 ASS'Y	1	PCS
C211	65L 3J2206ET	22PF 5% 3KV TDK	1	PCS
C212	65L 3J2206ET	22PF 5% 3KV TDK	1	PCS
C901	65L305M2222E3	2200PF+-20%400VAC BY TD	1	PCS
C902	65L305M2222E3	2200PF+-20%400VAC BY TD	1	PCS
C903	63L 107474 HS	0.47UF +-10% 250VAC	1	PCS
C904	67L215S10115K	100UF 450V	1	PCS
C922	67L215C102 3H	EC LESR 1000UF16V HERME	1	PCS
C923	67L 215102 3H	1000UF +-20% 16V	1	PCS
CN901	33G8029 5A	WAFER	1	PCS
CON10	2 95G8014 6 19	WIRE HARNESS	1	PCS
CON20	1 33L8020 2D AC	CONN.2P R/A DIP BY ACES	1	PCS
CON20	2 33L8020 2D AC	CONN.2P R/A DIP BY ACES	1	PCS
DB901	93L 50460502	KBP206G	1	PCS
F901	84L 7H200 SL	250V/2A LIHEL FUSE	1	PCS
FB901	71L 55 29	FERRITE BEAD	1	PCS
IC901	56L 379 32	SG6841D BY SYSTEM	1	PCS
IC902	56L 139 3B	PC123 Y82	1	PCS
L201	73L 253139 YL	CHOKE	1	PCS
L202	73L 174 30YSA	FILTER	1	PCS
L902	73L 174 26 LS	COMMON CHOKE	1	PCS

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L903	73L 253 91 LS	CHOKE BY LI SHIN	1	PCS
L904	73L 253 91 LS	CHOKE BY LI SHIN	1	PCS
NR901	61L 58120 WT	NTCR 12OHM 20% 2A SCK-1	1	PCS
PT201	80LL15T 7DNG	X'FMR	1	PCS
Q206	57G 761 6	2SC5706-P-E	1	PCS
Q207	57G 761 6	2SC5706-P-E	1	PCS
R903	61L152M10458F	100K OHM 5% 2W	1	PCS
T901	80LL17T 2 T	X'FMR	1	PCS
	PWPC1521CPD1QAI	POWER BOARD FOR AI	1	PCS
C202	65L0805104 22	0.1UF +-10% 25V X7R 080	1	PCS
C203	65L0805104 22	0.1UF +-10% 25V X7R 080	1	PCS
C205	65L0805104 22	0.1UF +-10% 25V X7R 080	1	PCS
C206	65L0805331 31	CHIP 330pF 50V NPO	1	PCS
C208	65L0805474 22	CHIP 0.47UF 25V X7R 080	1	PCS
C209	65L0805105 22	CHIP 1UF 25V X7R 0805	1	PCS
C213	65L0805105 22	CHIP 1UF 25V X7R 0805	1	PCS
C214	65L0805474 22	CHIP 0.47UF 25V X7R 080	1	PCS
C907	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C908	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C909	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C910	65L0805102 32	CHIP 1000P 50VX7R 0805	1	PCS
C926	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C927	65L0805104 32	CHIP 0.1UF 50V X7R	1	PCS
C930	65L0805102 32	CHIP 1000P 50VX7R 0805	1	PCS
C931	65L0805102 32	CHIP 1000P 50VX7R 0805	1	PCS
D201	93L2004 2A	SM240A DO-214AC	1	PCS
D202	93L 39S 8 T	ZD RLZ11B ROHM	1	PCS
F201	61L1206000 4	0 OHM 4A 1/4W	1	PCS
Q201	57L 760 5B	PDTC144WK SOT346	1	PCS
Q202	57L 760 4B	PDTA144WK SOT 346	1	PCS
Q203	57L 763 3	AO4411 SO-8 BY AOS SMT	1	PCS
Q204	57L 417 4	PMBS3904/PHILIPS-SMT(04	1	PCS
Q205	57L 417 6	PMBS3906/PHILIPS-SMT(06	1	PCS
R202	61L0603103	CHIPR 10K OHM +-5% 1/10	1	PCS
R203	61L0603623	CHIPR 62K OHM +-5% 1/10	1	PCS
R205	61L0603472	CHIPR 4.7K OHM +-5% 1/1	1	PCS
R206	61L0603123	CHIP 12K OHM 1/10W	1	PCS
R207	61L0603392	CHIP 3.9K OHM 1/10W	1	PCS
R208	61L0603221	CHIPR 220 OHM+-5% 1/10W	1	PCS
R209	61L0603392	CHIP 3.9K OHM 1/10W	1	PCS
R211	61L0603123	CHIP 12K OHM 1/10W	1	PCS
R216	61L0603681	CHIP 680 OHM 1/10W	1	PCS
R217	61L0603471	CHIPR 470 OHM+-5% 1/10W	1	PCS
R218	61L0603123	CHIP 12K OHM 1/10W	1	PCS
R219	61L0603513	CHIP 51K OHM 1/10W	1	PCS
R220	61L0603471	CHIPR 470 OHM+-5% 1/10W	1	PCS
R222	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS
R223	61L0603000	CHIPR 0OHM +-5% 1/10W	1	PCS

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R901	61L1206105	CHIP 1MOHM 5% 1/4W	1	PCS
R902	61L1206105	CHIP 1MOHM 5% 1/4W	1	PCS
R908	61L1206519	CHIPR 5.1OHM +-5% 1/4W	1	PCS
R909	61L1206472	CHIP 4.7KOHM 5% 1/4W	1	PCS
R910	61L1206472	CHIP 4.7KOHM 5% 1/4W	1	PCS
R911	61L1206472	CHIP 4.7KOHM 5% 1/4W	1	PCS
R912	61L1206101	CHIP 100 OHM 5% 1/4W	1	PCS
R913	61L1206103	CHIP 10KOHM 5% 1/4W	1	PCS
R914	61L1206243	CHIP 24K OHM 5% 1/4W	1	PCS
R928	61L1206102	CHIP 1K OHM 5% 1/4W	1	PCS
U201	56L 608 1	TL1451ACD	1	PCS
ZD901	93L 39S 12 T	RLZ20B BY ROHM	1	PCS
ZD904	93L 39S 19 T	PTZ7.5B	1	PCS
	715L1074 1	PCB	1	PCS
C201	67L215C1514HT	LOW ESR 150UF 25V 8*7MM	1	PCS
C204	67L 305330 7T	33UF 105	1	PCS
C904	6L 31502	1.5MM RIVET	2	PCS
C905	65L 2K152 1T6921	1.5NF/2KV Y5P +-10%	1	PCS
C906	67L 305220 7T	22UF +-20% 50V	1	PCS
C920	65L517K102 5T	1000PF 10% Y5P 500V	1	PCS
C921	65L517K102 5T	1000PF 10% Y5P 500V	1	PCS
C924	67L215B4713HT	470UF 16V LTR471M1CF11V	1	PCS
C925	67L215B4713HT	470UF 16V LTR471M1CF11V	1	PCS
C929	64L700J1040AT	0.1UF 50V PEN	1	PCS
D203	93L 64 1152T	1N4148	1	PCS
D204	93L 64 1152T	1N4148	1	PCS
D205	93L 64 1152T	1N4148	1	PCS
D901	93L 6026T52T	RECTIFIER DIODE FR107	1	PCS
D902	93L 6038T52T	FR103	1	PCS
D903	93L 64 1152T	1N4148	1	PCS
IC903	56L 158 4 T A	H431BA	1	PCS
L902	6L 31502	1.5MM RIVET	4	PCS
PT201	6L 31502	1.5MM RIVET	2	PCS
Q901	57L 420 PP T	2PA733P	1	PCS
Q902	57L 419 PP T	2PC945P	1	PCS
R201	61L 60239352T	39K OHM 5% 1/6W	1	PCS
R210	61L 60215352T	15KOHM 5% 1/6W	1	PCS
R212	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R213	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R214	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R215	61L 17220252T	2K OHM 5% 1/4W	1	PCS
R221	61L 17210252T	1K OHM 5% 1/4W	1	PCS
R904	61L214Y10552T	1M,1/4W	1	PCS
R905	61L214Y10552T	1M,1/4W	1	PCS
R906	61L214Y75452T	750KOHM 5% 1/4W	1	PCS
R907	61L214Y75452T	750KOHM 5% 1/4W	1	PCS
R915	61L 17247052T	47OHM 5% 1/4W	1	PCS
R916	61L 17210352T	CFR 10KOHM +-5% 1/4W	1	PCS

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R920	61L175L47052T	47OHM +-5% 1/2W	1	PCS
R921	61L175L47052T	47OHM +-5% 1/2W	1	PCS
R922	61G 20033352T	33KOHM 1% 1/4W	1	PCS
R923	61G 20036252T	3.6KOHM 1% 1/4W	1	PCS
R924	61G 20024252T	2.4KOHM 1% 1/4W	1	PCS
R925	61L 17210252T	1K OHM 5% 1/4W	1	PCS
R926	61L 17210252T	1K OHM 5% 1/4W	1	PCS
R929	61L 17210152T	100 OHM 5% 1/4W	1	PCS
T901	6L 31502	1.5MM RIVET	4	PCS
ZD902	93L 39 5452T	ZENER HZ12B2	1	PCS
ZD903	93L 39 7752T	ZENER HZ5C1	1	PCS
	90L 411501	HEAT SINK	1	PCS
	M1L1730 8128	SCREW M3x8	1	PCS
Q903	57L 667 22	FQPF8N80C TO-220F	1	PCS
	96L 29 6	SHRINK TUBE UL/CSA	1	PCS
R917	61L 2J39858H	0.390OHM 5% 2W	1	PCS
	90L 410 2	HEAT SINK	1	PCS
D911	93L3006 1 A	31DQ06	1	PCS
	90L6115 1	heat sink	1	PCS
D910	93L3020 18	RL4Z	1	PCS
	71L 100506 H	FERRITE CORD 12.8*7.9*4	1	PCS
	71L 100509	FERRITE CORD	1	PCS
	87L 501 14 RF	AC SOCKET	1	PCS
	95G8021 2502	CN901 ASS'Y	1	PCS
	95L205S354022	HARNESS	1	PCS
	96L 29 6	SHRINK TUBE UL/CSA	60	MM
	15L5942 1 B	BASE BRACKET	1	PCS
	20L 008 1	BRACKET RISER	1	PCS
	34L1230 Y2 T	VESA COVER	1	PCS
	34L1231 Y2 T	RISER FRONT	1	PCS
	34L1232 Y2 T	RISER REAR	1	PCS
	34L1233 Y2 2T	BASE	1	PCS
	37L 483 1	HINGE	1	PCS
	M1L 130 6125	SCREW	1	PCS
	M1L 130 8125	SCREW	2	PCS
	M1L 140 8 47	SRCEW	4	PCS
	Q1L 130 6 47	SCREW	1	PCS
	Q1L 330 8 47	SCREW 3X8mm	2	PCS
	Q1L 330 8 47	SCREW 3X8mm	6	PCS
	2F0605100	SCREW NUTS M6.0*P1.0 ㄱ	2	PCS
	4F0612052 00	METAL WASHER	4	PCS
	4F061210M 00	METAL WASHERS12.0*6.03*	2	PCS
	4F061210T 00	METAL WASHERS12.0*8.00*	2	PCS
	4F061210T 01	METAL WASHERS12.0*4.72*	4	PCS
	15F 483110	BRACKETS	1	PCS
	15F 483130	BRACKETS	1	PCS
	28F0618070	SHAFTS	2	PCS
	4L0612052 00	METAL WASHERS	4	PCS

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	4L061210M 00	METAL WASHERS12.0*6.03*	2	PCS
	4L061210T 00	METAL WASHERS12.0*8.00*	2	PCS
	4L061210T 01	METAL WASHERS12.0*4.72*	4	PCS
	15L 483110	BRACKETS	1	PCS
	15L 483130	BRACKETS	1	PCS
	28L0618070	SHAFTS	2	PCS

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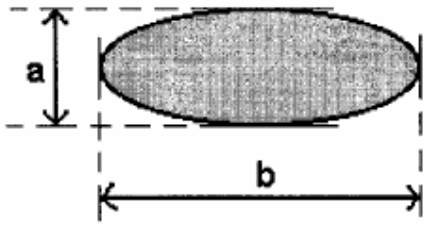
14. Definition of Pixel Defects

CLAA150XG 09

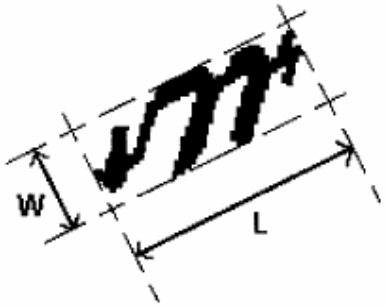
DEFECT TYPE			LIMIT		Note
VISUAL DEFECT	SCRATCH		0.01mm≦W≦0.05mm L≦10mm	N≦3	-
	INTERNAL	SPOT	0.15mm≦φ≦0.5mm	N≦3	Note1
		FIBER	W≦1.0mm, L≦1.5mm	N≦3	Note1
		POLARIZER BUBBLE	0.15mm≦φ≦0.5mm	N≦3	Note1
		TOTAL	N≦6		-
ELECTRICAL DEFECT	BRIGHT DOT		N≦0(FLASH DOT N≦0)		Note2
	DARK DOT		N≦3		-
	TOTAL DOT		N≦4		Note2
	TWO ADJACENT DOT		≦2 PAIRS		Note3
	THREE OR MORE ADJACENT DOT		NOT ALLOWED		-
	DISTANCE BETWEEN DEFECT DOT				
			Two dark dots	≧10mm	Note4
	LINE DEFECT		NOT ALLOWED		-

[Note1] W : Width[mm], L : Length[mm], N : Number, φ : Average Diameter



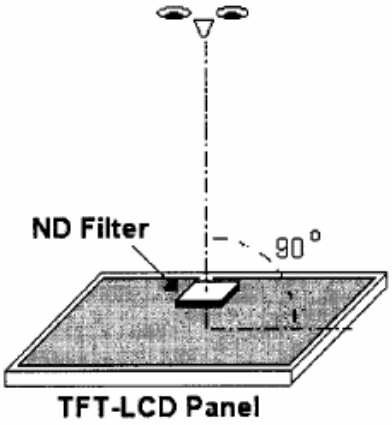
$\phi = (a + b)/2$

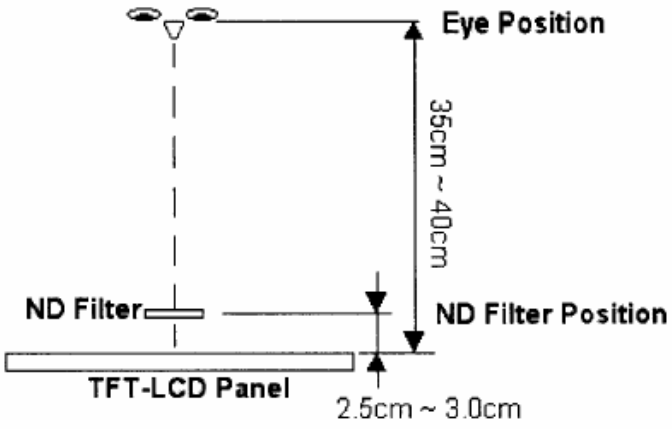
1. (White, black) Spot
2. Polarizer Bubble



1. Fiber

[Note2] Bright dot is defined through 5% transmission ND Filter as following.





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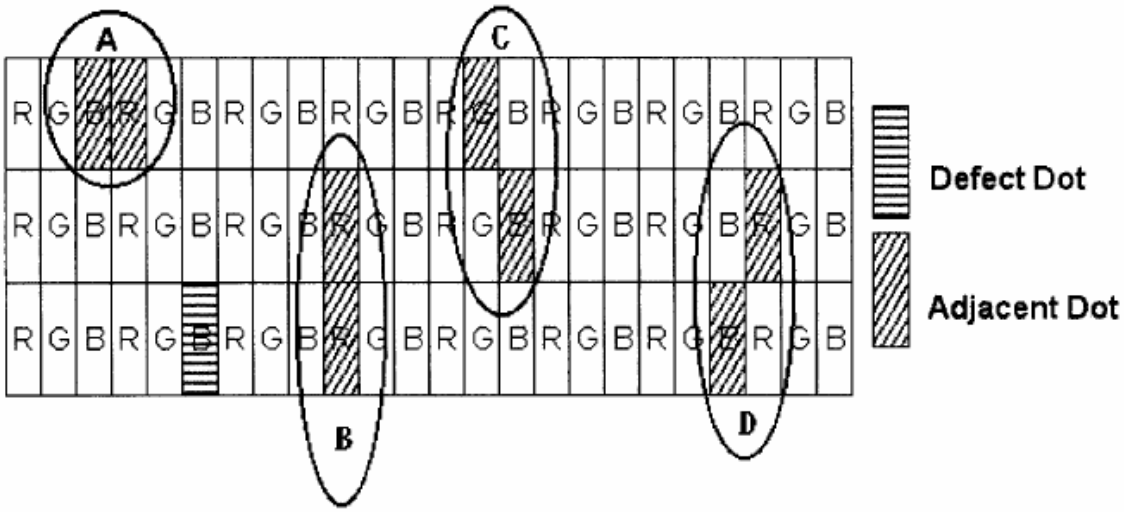
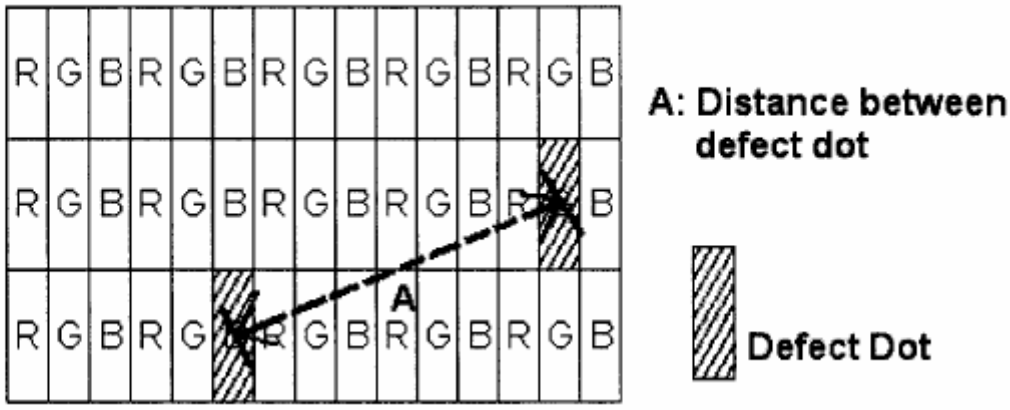
[Note3] Judge defect dot and adjacent dot as following. Allow below (as A, B, C and D status) adjacent defect dots, including bright and dart adjacent dot. And they will be counted 2 defect dots in total quantity.



[Note4] Definition of distance between defect dot as following.



[Note5] Other

(1) The defects that are not defined above and considered to be problem shall be reviewed and discussed by both parties.

(2) Defects on the Black Matrix, out of Display area, are not considered as a defect or counted.